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REPORTED BY ALLEN ABEL

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## DREAMS AND APPETITES

BY PETER C. NEWMAN

For a nation under construction, a magazine that strove to capture, and to shape, its times

**BETWEEN 1900**, when a fresh speech dawned over an unsuspecting Dominion then barely a nation, and this sprightly autumn of 2005 as *Maclean's* celebrates its centennial, I am struck by the parallels between the magazine and the country. Both have journeyed from promise to possible to prosperous to postmodern.

Canada began the century by gradually jettisoning the final vestiges of British rule, and ended it by bringing home the Constitution. As a nation, we gained measure and lost our innocence, survived bitter tensions within our borders and were drawn into three wars

beyond. We became our neighbour's senior trading partner, but demonstrated our independence by opting out of Washington's military adventures.

Like some giant stirred by feelings of power that come late to the adolescent, not yet daunted by the failures and mishaps of maturity, the country was first populated, then settled and developed until it ranked as the world's eighth-most-productive economic powerhouse. Everything changed and the magazine was there to chronicle the process. The comforting traditions of home and hearth were carried aside into the economy unhaggled from boom to bust and back again. Ottawa's politicians altered their sustaining ideologies as often as the shadings in the puff of a geyser's breath. Our stirring rural landscape was largely abandoned as Canada turned into a frenetic collection of city states. Once an impenetrable WASP stronghold, the country was transformed into the most multicultural of cultures—the

most beef and Yorkshire pudding that had spiritualized the taste of its former elite became an ethnic dish.

Likewise, that magazine went from a thin, disposable pamphlet to a lively journal with an annual cumulative circulation of 19 million. It was and remains indispensable to the Canadian experience, keeping pace with the seismic changes of the country it serves. From its generous birth as a biannual digest with sales of 6,000 to an earnest instant news as an energetic newsweekly with nearly three million readers a week, this publication has chronicled every leap and lurch of the country's dramatic sea change.

As both the nation and the magazine matured, reading *Maclean's* became a way of looking at the world. At its best, it was a mirror in which Canadians glimpsed each other and recognized themselves. In the process, it was woven into the dreams and memories of its readers. Historically, it is the closest Canada has ever come to having a national house organ, providing a running commentary on who we are and why we are here. Owned by the Maclean-Harter

Writer Sidney Katz in 1960, a magazine keeping pace with the country it serves

publishing firm for most of its existence (and now belonging to the Rogers group of companies), the original firm's attitude toward the magazine was best described by Reynold Chalmers, its long-time president: "We are holding Maclean's in trust for the people of Canada."

Leafing through all those stacks of back issues and rereading the magazine's obnoxious hunt for some glimmer of what constitutes our identity, it is clear that Maclean's influenced the collective consciousness of succeeding generations, helping them discover individual reasons for celebrating their citizenship. In the pre-television age, it was the kind of magazine subscription saved in those attic where lampshades were tucked away, sitting by the glow of a single light bulb; they would spend a rainy afternoon rummaging through back issues, covering across the tatters of pages cut out by them or their children to fill scrapbooks for grade school projects.

Magazines have always managed to stir up special excitement. Unlike books, in which the writer basically addresses himself to the reader as an audience of one, magazines owe their genesis to the much more lively anxiety of the Roman forums and village fairs of medieval Europe. In few countries has national magazine exerted such influence. This land's outrageous geography—one-sixtieth of the Earth's land area stretched across six time zones—made it impossible during most of Canada's history to distribute a newspaper routinely. It was thus left to national magazines, led by Maclean's, to provide such an essential, if fragile, can-worm link.

IT WAS CANADA'S special circumstances that encouraged the early success of *Le Col*. John Bayne Maclean, a fencing champion with a triangular mustache, who owned a clutch of trade magazines. In 1905, he started the tiny circulation *The Canadian Magazine* (the first of several names). Its contents consisted mainly of articles scalped from other publications. It was the mass adoption of the halftone engraving process and perfection of the high-speed rotary press that made the magazine possible. As about the same time, Canada's merchant marines realized that the necessity completed network of railroads had provided them with a national market, plus a dependable mode of distribution. Advertising in national magazines became the



Lt. Col. John Maclean, a fencing champion whose namesake magazine began modestly

finest way of turning brands into household names. Maclean changed the name of his magazine to bear his own in 1911, and it quickly expanded into more varied and far more relevant coverage.

Even before 1910, the magazine featured its first touch of erotica by running a picture of Miss Allan, a Canadian dancer in a London stage show, described as a "Jamaican woman lightly adorned in veils and beads—who admitted she knew nothing about dancing."

Arthur Lowe, who joined the staff in 1925, remained at its helm for the next quarter of a century, sometimes without the official title of editor. During his lengthy tenure, he earned the magazine's true voice of Canada. "I've built a staff," he once boasted, "which is as unmistakably Canadian as the

smell of the autumn forest in 'Ontario.'" Irwin also knew how to get the best from his staff, urging them to fashion sentences "that go straight into your head like a Roman candle." It was not always a happy place. Two writers on assignment committed suicide, and an art director once rushed hysterically into Irwin's office shouting, "What will I do? What will I do? My wife's on the roof of the Plaza Hotel threatening to jump if I don't buy her a new fur coat!"

I'VE BEEN PART of this magazine for half a century, ever since Oct. 13, 1954, when managing editor Peter Bertin bought my first feature story for \$250. As color editor during the 1970s, I turned Maclean's into a newsmagazine, and remain a regular

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columns. These are some highlights (and lowlights) from my memory of the magazine's colourful recent past.

Ralph Allen, who succeeded Irwin, was the greatest of the magazine's editors and one of its most luminous writers. His once described small Prairie towns as "much idealized by those who have never lived there, much moved-away from by those who have, and much mourned by people of both kinds."

During the mid-'30s, when Pierre Berton was managing editor (second in command to Allen), he became so fed up with an Alberta subscriber's complaints about the magazine that he cancelled the reader's subscription.

Jane Cailwood, the magazine's first writer at the time, recalled a typical disagreement with Berton: "He planned one day and said, 'We'd like a piece on the universe

"The universe?" I asked, a baby on my lap, not sure I had heard right.

"Yes, the universe," he said, impatient that the conversation was dragging on. "Deadline in two weeks."

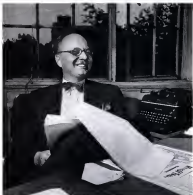
In 1969, when evangelist Charles Templeton was named editor of *Marlow's*, his office had to be rebuilt because it was found to be six inches larger than that of Donald Hurst, the publishing firm's proprietor.

When we published an article by Margaret Atwood and allowed a few readers to crop in, she sent me a pointed note: "There's a wonderful inversion looking around. It's called the telephone. Some magazines use it for a process called checking. That's because they like the material they publish to be as accurate as possible. Sincerely, Margaret Atwood."

The revered broadcaster Peter Gowenlock was with the magazine for a decade, including a stint as its culture. His first investigative story was a startling bit of reportage about the inhuman conditions in the mental wing at Montreal's Bordet east jail.

Allan Fotheringham, who graced the magazine's back page for nearly three decades, had a wonderful eye with words, such as his description of airport loots "that crust the stale odour of mistletoes that have gone too long without a shampoo," and his description of the Liberal party's arrogance as "sweeping through the underbelly of this country like a nuclear submarine to the deep."

Another wit was Harry Bract, who wrote a poignant memoir of young hat at Mount Allison University ("Going all the way was difficult when there was nowhere to go").



Arthur Iwert (above) illustrator Franklin Kufchick (below, right) with editor Allen in 1954

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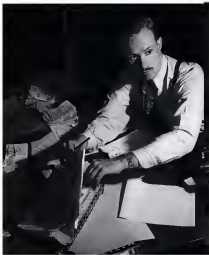


The best writer during my time at *Maclean's* was Roy MacGregor, recruited from that sort of a trade magazine called *Officer Magazine and Methods*. This was his description of the renowned novelist Hugh MacLennan, then in the waning of his career. "Beyond him, the hardwood forests of Windsor in the not distant past, blurring with the early rumour of fall. Soon the colours of Quebec's Eastern Townships will rise to equal his own anxiety. October will come and with it the redness of Viceroy's Time, his last novel in 13 years."

**THE SCORE** of strong-willed individuals who have edited *Maclean's* since its inception regarded their mandate as nothing less than to set the national agenda. They walked the unknown terrain and chose winners who populated these northern latitudes, and explored that handful of metaphors that cut across private and regional interests. They and their talented staffs created and sustained a family of subscribers and contributors united by common concerns and commitments. Never afraid to shape as well as to reflect the times, they defended the media against French-Canadian separatists and English-Canadian conservatives. They asked the most about "Lester, there are too many of us who care about this country. We won't let Canada go!"

Any great magazine reflects the interests of its editorial staff. What makes it successful is that its writers and editors are possessed by a sense of mission. It is the readers who ideally drive a publication. This is not a matter of dictating to previous content. It comes down to aligning the priorities and aspirations, needs and sensibilities of editors with those of the readers, and vice versa. "The reality of *Maclean's*," pointed out long-time magazine editor and consultant Clay Felner, "depends not on great publishing organizations, previous editorial formulas, or promotion, or high-powered salaries, but on the vision of one man's editorial dream. It's the beginning and end of magazines."

At *Maclean's*, another essential qualification was that its editors think nationally. As they set back their dispatches from the briefing berths, *Maclean's* staff writers and contributors found themselves describing and photographing a country of the mind—and more often a country of the spirit—than they frequently aware existed only in the mind's eye of their editors, comfortably ensconced in downtown Toronto.



Boston in 1947: Calhoun recalls him calling her and saying, "We'd like a piece on the universe!"

New-style writers and editors had to be recruited to run the magazine. This was a particularly timely assignment when set against the dominant reality of *Maclean's* own geographic location. The magazine's offices have inevitably been within arm's reach of just about every national election in the country. Each editorial staff's willingness to seek talent beyond their own literary family compact determined its success. Random episodes and unconnected personalities in the economic hinterland flowed and merged to form national trends and perceptions.

The men and women who have occupied *Maclean's* editorial perch have had widely different backgrounds, interests and perceptions, but the good ones treated the pro-

vision less as a job than as a calling. If there was a sense that united them, it was the conviction that Canada was built on dreams as well as appetites; that this country was put together not by bloodlines, kin or tradition, but waves of newcomers of every sex and stock who arrived here dreaming big dreams about the future. "The mind apprehends the idea of a nation," wrote the French philosopher André Malraux, "but what gives this idea its sentimental force is a community of dreams."

Like gold, news depends on its use. The ideal issue of *Maclean's*—or any set of issues, since no individual copy can hope to meet such grandiose expectations—becomes a point of reference that helps define the collective interests and aspirations of its readers. By having faith that our politicians who rule a



Power 100: Dinklage with Newman (top), Calhoun in 1956 (bottom left), Gervais in 1967

country as securely governable in Canada could learn from their failures, *Maclean's* broke up a tradition of criticizing whatever coalition of hapless happened to hold its theory at any given moment. The important test was never party affiliation. The differences that existed were between those public men who facilitated the Canadian experiment, and those who thought it had gone far enough.

When *Maclean's* was founded a century ago, Canada was a nation of small undertakings, a lonely crowd united by rigid personal values that must have seemed like God-given truths. Then, as the nature of the country and its people changed, the magazine widened its purview, altering its frequency and content. But *Maclean's* purpose never

changed. At the moment it was created under the editorial baton of Ken Whyte, who had remarkable success reviving *Saturday Night* magazine and was the founding editor-in-chief of the *National Post*.

Many counts of success and periods. The magazine's golden age; the periods give a meaning. This special issue is a modest attempt to share the magazine's past 100 years, not only by illustrating how it reacted to the times it was reporting, but by trying to define our new century. Canada and *Maclean's* have always existed on the edge, the country and the magazine moving from fragile to confident and back again. Canada's still proclaimed *National Magazine* remains a lively icon, its mandate as essential as ever. Long may it thrive. ■



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MACLEAN'S 100



## READ ALL ABOUT IT

For the past century, Maclean's has offered a running version of history

**JOURNALISTS, IT IS SAID,** write the first draft of history. Often in less-than-ideal conditions. Sometimes under fire. Always on deadline. For the past 100 years, Maclean's writers have borne witness to the pivotal moments, at home and abroad. Some events—like D-Day and Sept. 11—were instantly recognizable. Others—the suffragette movement, the Richard riot, that newangled airplane—took longer to come into focus. If something was interesting, entertaining, important, Canadians read about it in our pages. The raw, running version of history isn't perfect, but as these articles (most of them abridged) show, it remains compelling even decades later. Adding the footnotes is somebody else's job.

JOHN HON GATEHOUSE



## 1905-1915

WHAT IT REALLY FEELS LIKE  
TO BE "UP IN THE AIR"  
BY JAMES P. HANVERSON  
OCTOBER 1911

THERE ARE TWO psychological statuses under which a man may go up as a passenger in a flying machine should he be lucky enough to seize the opportunity. These are *Courage and Confidence*. Of the comfort and support to be had from the former I know little or nothing, but of the latter I can speak with authority, for it was under the solid support of confidence in the man that took me that I made—a long flight! No—a two-minute flight of about as many miles and as many hundred feet from the earth. It was with Charles F. Willard, at the recent aviation meet at Toronto.

I was seated and waiting to fly, there was

a hulk of about five meters while a loose nut was tightened on the front running wheel. At last the propeller was turned, and after a few coughing grunts scolded down to that steady alert whir as of a great beetle was sent hurtling. Willard took his seat and the machine roared ahead as the men behind released their hold. We rolled up the runway, and I was watching the bounding form wheel for the moment when we should leave the ground. I cannot remember when



In the October 1911 of Maclean's, which had changed its name from *The Busy Man's Magazine* in March of that year, Hanverson wrote of his first trip in a biplane like the one shown above.

It came. I cannot say that I saw it.

The first thing I noticed was that we were as low as the sea; was a canvas swaying hatch to the side. It was like the motion of a sailboat sloping over the edge of a wave. It was a boat sailing very close to a very big wind, for we were travelling then at about 40 miles an hour and gaining speed. The wind brought the tears streaming from my eyes. But it brought a pulsing joy into the veins the like of which I had never known.

We lifted, lifted, lifted! We crossed a road about 50 feet up and sailed on over a field. Beside the fence, two men squatted on the ground. I saw their upturned faces and pined them, for a man in a flying machine is inclined to look down on the mere earth creatures. We were out over another field and were approaching the brow of a hill. Over this we sped, and out over the middle of a field where a farmer had been reaping. His machine had been left where he had finished his day's work. That was as it should be, but up aloft there in the swiftness of glorious rushing air currents, we had nothing to do with days and times of day. It seemed as if that wonderful flight should never stop.

Willard turned in his seat and laughed back at me. "How do you like it?"

"Fine," I shouted back, and I meant it. I meant that it was thrilling every nerve, bringing every fibre to a higher point of feeling than I had believed could be heaven. I was like the mouse in the jar of sugar; I was living at a higher velocity than ever before.

Willard lifted his hands from the controlling wheel and lower, and then I found that I, too, had actually let go with one hand and was waving it at him.

Then we were turning. We banked up against the wind, and came around on a slant. I could feel the machine slip away about 20 feet toward the ground, but there was no sensation of falling. It was the boat slipping down the wave again, only more



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like it than before. We bared around with great fire air beating in our faces, and driving down to the last corner of our lungs. It is hard to try to describe a thing when it has advanced beyond the terms of all the things which you have known before. It was merely—wonderful.

We went on our way back to the field. We continued to beat down toward the earth. When we came back over the hill we were not more than 100 ft up, and we rapidly drove up the field. We were going very fast, but you had to find a door there is no ground close enough to enable you to see your speed. As last we crossed over a line of telegraph wires, and with a long sweep were back on the ground over which we rolled until we lost the speed and came to a stop. It was here before I was sober after time. When I had gone up I had expected to meet feet somewhere on the way, but when we left the ground I had been too busy for every breathless second. I did not remember again and so on a solid one if I had not been afraid. One could say anything. It seemed so hopeless to try to explain.

I had expected to be proud of the achievement. I had expected to walk lightly by my fellows who had never flown. I came down in great humility. It was as though I had walked in great and holy places, in clean and antiodorous ways. For a time malice, envy and hatred rose so though they had never been. None of the petty human in domestication survive in the heat, open ways of the air. With the return to earth they come about a man again, but they are not with him up there, and they cannot live on as he has been after the slight—for a little while, at least.

When one comes down from the clouds, one walks softly. Perhaps if one keeps very still and hopes very hard, a gleam of truth will come again. Flying will seem to be far from the mere and half-conscious thing it is today.

# MACLEAN'S

"CANADA'S NATIONAL MAGAZINE"



DOMINION DAY  
Illustration

## 1915-1925

**SPEAKING OF WOMEN**  
BY NELLIE MACLEUNG, MAY 1916

**THE CAVE DWELLER**, long ago, realizing that the food supply was limited and hard to obtain, was obliged to look upon every other man as a possible enemy, and considered a good policy to kill as many as he could that crowded around the Neolithic hearth corner might be lessened. The reasoning was consequently sound. If the divisor is lessened,



the quotient is correspondingly increased! Life was simple then. Every man was his own lawyer, butcher, barber, dry cleaner; he settled his own quarrels, without lawyers' fees or "bones"; there were no apartment houses, no notices, no mail delivery, no rail cars, or any other complication. But eventually man began to plan greater tasks than could be accomplished by individual effort, and the idea slowly grew that the other man might be a real help in times and perhaps it was a mistake always to kill him. Co-operation began when one man chased the bear out of the cave and another man killed him when he ran past the gap?



Since then the idea of co-operation has steadily grown. Now we are so utterly dependent upon the other man—or woman—that we cannot live a day without them. But the primitive instincts die hard! Men are still haunted by the ghost of that old fear that they may not be enough of some things to go around if too many people have the same chance of obtaining a share. This deep-rooted fear, that any change may bring

personal inconvenience, lies at the root of much of the opposition to all reform. Men held to slavery for long years, condescending to justifying it, because they were afraid that without slave labour life would not be comfortable. Certain men have opposed the advancement of women for the same reason; their hearts have been bowed with the old black fear that, if women were allowed



equal rights with men, someday some man would go home and find the domestic not ready, and the positions not even peddled. But not every girl expects to stay in her father's house for their opposition. They may they oppose the unfairness of men's work because they are not free, weak and want to struggle in the busy-busy of life; that women have far more influence now than they could have, and besides, God never intended them to be slaves, and it would break up the home, and make life a howling wilderness, the world would be full of neglected children (for mine at all) and the bodily joys of the freer world would wither from the earth. That women are physically inferior to

men is a strange reason for placing them under a further handicap, and we are surprised to find it advanced in all seriousness as an argument against women's suffrage. The exerting of the ball does not require physical strength or endurance. No man has the right to ownership of his weight, height or lifting power; he exercises this right because he is a human being, with hands to work, brain to think, and a life to live.

It is no sane woman from cold and fatigue and all unpleasantness that the Christian ones would deny her the right of exercising the privileges of citizenship, though just how this could be brought about is not stated. Women are already in the hands of life, 30 per cent of the adult women of Canada and the United States are wage earners, and the percentage grows every day. How does the lack of the ballot help them? But any woman to the woman who feels the sting of social injustice to refuse to rise, at least, had no part in making such a law?

Now even in the matter of household women are not allowed free land unless they are widows with the care of minor children, although any man who is of the age of 18 may have 160 acres of payment of \$10, and the performance of certain duties. The illegal reason for this discrimination is that women cannot perform the required duties and so, to save them from the temptation of trying, the government in its fatherly wisdom denies them the chance.

But women are doing household duties whether household duties are being done. Women suffer the hardships—cold, hunger, loneliness—against which there is no law, and, when the household is "prowled" all the scrub cleared, and the land broken, the husband may sell the whole thing without his wife's knowledge, and he can take the money and depart, without a word. Against this there is no law either.

No person objects to the householders'...



wife having to get out wood, or break up scrubland, so long as she is not doing these things for herself and has no legal claim on the result of her labour. I saw a letter last week which was written to the *Standard* Editor of one of our papers, from a woman on the homestead. She asked if a part of the house could be given to her, for she had to get out all the wood from the bush. Her husband had gone to work in the mines in B.C. She expressed her gratitude for the help she had received from *Maclean's* before, and voiced the hope that when "she got things going" she would be able to show her gratitude by helping someone else. This brave woman is typical of many. Whether able or not able, women are out in the world, bearing its conditions, fighting their own battles, and always under a handicap. Now the question is, what are we going to do about it?

One way, pursued by many, is to turn blind eyes to conditions as they are, and "batter" away about how frail and sweet women are, and that what they need is greater dependence. This bubble of marriage and home for every woman sounds soothing, but does not seem to last anywhere. Before the war, there was a nation and a half more women than men in the Old Country alone—what will the proportion be when the war, with its fearful destruction of men, is over? One would think, to read the viewpoints that pass as articles on the suffrage question, that good husbands will be supplied upon request. If you could only write your name and address plainly and enclose a stamped envelope.

It is certainly true that the old means of labour have been closed to women. The introduction of machinery has done this, for now the work is done in factories, which formerly was done by hand labour. Women have not deserted their work, but the work has been taken from them. Sometimes it is said that women are trying to usurp men's

place in the world, and if they were, it would be merely an act of retaliation, for men have already usurped women's sphere. We have men cooks, waiters, housewives, dress-makers, laundresses—yes, men have invaded women's sphere. It is inevitable and cannot be changed by words of protest.

Men and women have two distinct spheres, when considered as men and women, but



as human beings there is a great field of activity which they may—and do—occupy in common. It is in the common field of activity that women are asking for equal privileges. There is not really such aggression in pouring out their women's sorrows by bricks, and therefore can never be regarded as man's equal in the matter of citizenship. We might say that a girl without a husband, that because a man (as a rule) cannot thrust a needle, therefore he should not ever be allowed to work. Life is more than laying of bricks or threading needles, for we have diverse gifts given to us by an all-wise Creator.

The exceptional woman can do many things, and those occupations simply prove that there is no rule. There is a woman in the

Qu'Appelle Valley who runs a big wheat farm and makes money. The Agricultural Editor of the *Manitoba Free Press* is a woman who is acknowledged to be one of the best crop experts in Canada. Pygms do not confuse life? Even if the average woman is not always sure of the biblical theorem, that does not prove that she is incapable of saying who shall make the law under which the shall live.

But when all other arguments fail, the man-suffragist can always go back to the saintly motherhood one, and "the hand that rocks" Women are the mother of the race—therefore they can be nothing else. When once a woman has a child, they argue, she must stay right on the job of raising it. Children have been blamed for many things very unjustly, and one of the most outstanding of these is that they take up all their mother's time, and are never able to care for themselves, that no one can do anything for the child but the mother. From observation and experience, I wish to state positively that children do grow up—indeed they do—far too soon. The delightful days of babyhood and childhood are all too short, and they grow independent of us and a little while the day comes, no matter how hard we try to delay it, when they go out from us, to make their own way in the world, and we realize, with a queer shuddering at our hearts, that in the going of our first-born, our own youthfulness has gone too.

And when children have gone from their mother, she still has her life to live. The strong, active, virile woman of 50, with 20 good years ahead of her, with a heart warmed by one and filled with that large charity that only comes by knowledge—is forced to be reduced within the uplift of the world. Time goes on, and the world moves, and the ways of the world are growing kinder to women. Here and there is a shored eddy in the stream of life, where the big currents

never are felt, you will find the old misery arguments that women are intended to be helpless servants dependent upon man's bounty, with no life of their own. But the years of life grow stronger in these terrible days, and the cross is being taken up, and driven out into the turbulent water.

On March 1, at 3 in the afternoon, the Woman Suffrage Bill was given its second reading in the Legislature of Alberta, and the women of the province gathered in large numbers to hear the debate. For over an hour before the galleries were opened, women waited at the foot of the stair—white-haired women, women with little children by the hand, women with babies in their arms, smartly dressed women, alert, tailor-made business women—quiet, dignified and earnest, they were all there. They filled the galleries, they packed every available space. Many stood outside in the corridor.

When the speaker rose to move the second reading of the bill, the silence of the legislative chamber was tense, and the great mass of humanity in the galleries did not appear to breathe. The premier, as always forward way, outlined the reasons for the granting of the franchise; he did not speak of it as a favour, a boon, a gift or a privilege, but a right, and declared that the extension of the franchise was an act of justice, he did not once refer to it as the "war vote," or assure us of his deep respect for us. The leader of the opposition, whose advocacy of woman franchise dates back many years, seconded the reading of the bill, and short speeches were made by other members. There was only one who opposed it, one man whose name I do not remember. He declared it would break up the home.

Women will make mistakes, of course, and pay for them. That will be nothing new—they have always paid for their mistakes. It will be a change to pay for their own, and in paying for them they will learn wisdom.

# MACLEAN'S

"CANADA'S NATIONAL MAGAZINE"

April  
15th



"The Truth About War Debts" By Lieut.-Col. George A. Drew

1925-1935

LOW ROAD, THE LONG, LONG TRAIL  
OF YOUTH IN SEARCH OF WORK  
BY RONALD F. ELLIOTT,  
FEBRUARY 1, 1934

"HEY BUDDY, wake up! We're pulling out North Bay!"

These words awakened me from my position on the lower floor, just as the long freight from the south came puffing and snorting its way into the yards.

The man who spoke was a stout tramp, and as the majority of the 36 men in the

OR HOW YOU MOVE THROUGH IT.



SHIFT. *the joy*

100 TEN DECADES | >



"empty" were young, they needed advice.

The "manliest"—massive merchandise train—came screeching to a stop and we "piled out." Scarcely enough, despite the late hour, the police were there to welcome us like a band of sprinters. We made a wild dash out of the yards. Most of us made it, but those who were caught faced 10 days or more in jail, depending upon the hammer of the judge.

An hour or so later, we were gathered around a roaring fire on the shore of Lake Superior. The night was chilly, but once we were thawed out the moose began—stories of hunger and exposure, while travelling from town to town and from coast to coast always in search of work.

We were, for the most part, boys in our teens already 20, forgotten and unwanted. Unforced silence had named some, who vowed they would never work again. Others were eager to work at anything. Four or five men, just inside age, were dead-on-the-wall tramps who never had worked and never would. One of the latter—a medical man who had lost his license, one rugged and cynical-seemed engaged to his fate. Depression days were boom days for them, their sole ambition being to secure the price of some rubbing alcohol or canned beans and get drunk. Many a cottage massacre had been started on the road to hell through the wiles of these fiends.

Like myself, nearly everyone seemed to be heading for the gold country—Kirkland Lake being my destination.

One young fellow of 22 who, when all ornaments failed, decided to go north in search of a school, proudly exhibited his diploma, qualifying him for teaching. The

others who were willing to work apparently had nothing definite in mind, and would be glad enough of anything that might free them from the necessity of wearing hand-me-downs and eating hand-outs. It would be something to be independent and not have to beg.

"Well, where do we sleep?" asked a Toronto boy "The Royal York or the King Edward?"

"I'll take the Royal York," called out.



Jim Long, Early Days of Trek in West of Fred

"Give us the King Edward," laughed another. And so we disbanded.

Those who were fit were enough to possess a blanket or even a walk up on the grass. But as most of the boys had nothing but what they wore on their backs, they went up town in the old jail which had been converted into a "bathhouse." I, who had been in North Bay before and had determined never to spend another night in these vermin-infested cells, remained behind.

Left alone, I stood staring disconsolately into the dying embers. A pale, full moon cast long flickering shadows over the waters of the lake, and the wail of a loon, like the cry of a lost soul, broke the stillness.

At the age of 14, it became necessary for me to leave school and go to work. Having no special training and a limited education,

I took anything I could get. Following up construction jobs, as a rube, I worked in many towns and cities from Winnipeg to the Pacific coast.

Came the fall of 1931—and within the end of my last steady job. I went home for a time, but the Depression had worked havoc there, so I "hopped a freight" for Ontario and Quebec. I worked for short periods, but most of the time I went from town to town, city to city, begging my living as I went. Two years passed—two years of continued disappointment that had come near to shattering my ideals and faith in humanity.

Surely there would be work farther on. Shortening, I fastened my light coat closer and headed for the main street. It was past midnight and everything was quiet.

I approached a prosperous-looking man about to enter an expensive car. "Pardon me, sir, I have no place to sleep. Could you spare me 15 cents?"

"No."

I had heard that answer a thousand times. Seeing a group of happy young people coming out of a restaurant, I repeated my question to one of them.

"No," he exclaimed, "do you guys think we are all suckers? Last night I gave a chap 50 cents for a bed. An hour later I met him on the street dead drunk. Now beat it!"

I tried to explain that we were all not alike, but he joined the others in the car and sped away.

Finally I gave up and walked along Oak Street, better known as Skid Road. It appeared deserted, but as I approached a second hand store I noticed a shabbily dressed fellow standing in the darkened doorway. He was waiting.

"What's the matter, buddy?" I asked. He looked up. Traces of madness in his face. He could not have been over 15. "Nothin'," he replied as he pulled his ragged cap further over his eyes.



## 1935-1945

ASSAULT ON NORMANDY  
BY L. S. SHAPIRO, JULY 15, 1944

WITH THE CANADIAN Forces in France—History's most dramatic battle—the rolling Normandy fields and resulting in over 1,000 years of war. But it cannot wait world history in proper perspective, perhaps I can write a personal version of Canadian history as it unfolded before my

eyes during those last flogging days, because between the seaside town of Berneville-sur-Mer and the Caen battle front, Canadian troops have written an immortal story.

For the story began on the weekend of May 28. The Sunday was gloomy and warm, and over London's air an expectant hush. People knew something was happening. There were no troops thronging the streets and no holiday gaiety on Piccadilly. Like the rest of the news correspondents, I had been cautioned to remain close to my telephone. The waiting was an excruciating ordeal. Then, early on Tuesday morning, the sun came. I was to report with full battle lilt at a secret rendezvous at 4 p.m. I drew a brigade of the 3rd Canadian Division.

We found our brigade in a marshalling yard enclosed by barbed wire. Once inside, we were out from the outside world. We still did not know where and when the assault would take place, but the country was indicated by the fact that the troops were playing poker with French die-thin notes.

One evening early in June, we rolled out of the camp. We took our places among thousands of trucks, tanks and guns anding towards the beach. A strip of dunes appeared in the east, and like a stage effect the light slowly increased over a beautiful and terrifying panorama on the harbour waters. There were ships—hundreds of them—anchored at anchor. From great battleships to smaller landing craft, they were strung out as far as the eye could see.

At last it was our turn to board our landing ship. The deck was jammed with tanks and officers. Sea of us were accommodated in a room snugly built for two bunk beds. We wondered how masterfully the Chas. McLean would behave. It didn't help when there was a general issue of two venal bags per person. We rode in another the next day. Early in the evening, the night in Caen moved walked into the windroom. "H-Heur



is at 7.35 tomorrow morning." I looked at the calendar. It was June 5. I went out on deck and watched the green countryside of Britain turn grey in the distance.

The armada carrying the 3rd Canadian Division ploughed through the choppy seas without incident. It was curious that we should not yet have evoked an enemy reaction although we were already wearing the coast of Normandy. The ship ploughed on, some times sailing heavily. Some of the troops were sick. The commando through a dune almost as tall as the sea. The only sign of action was the roar of planes overhead. Below decks, tank crews were scrambling over their machines preparatory to landing. The officers stood on deck scanning the horizon for signs of the Normandy coast.

Suddenly a low rumble reached our ears. "The naval guns have opened up," our skipper said. The ship moved on under a canopy of fighter planes. The series of dunes could be seen stretching out of the smoke haze over the beach. Below the smoke, the first Canadian infantry units, accompanied by tanks, were moving up the beach. The leading infantry landing ships, carrying the first Canadian assault troops, were caught on the beach by the maindage. The Canadians were already at close grips with the enemy and the long-awaited battle for the three-mile stretch of Hitler's seaward coastal fortifications was joined.

Two brigades of Canadians died at once promptly at zero hour accompanied by Canadian tanks carrying heavy guns for use against the sea walls. At Berneville, the centre of the Canadian assault area, a strip of mined beach, 75 yards deep, was contaminated by a low wall behind which was hidden a battery of Germans equipped with light automatic weapons.

Machine, our troops and tanks, success as they smashed through a succession of beach defences, reached inland. That was Montgomery's urgent order: "Don't fight on the beach; a moment longer than necessary break through and move inland as far as possible. Leave the stiff enemy German beach defences to follow up troops." Thus, the

Germans and take more than 100 prisoners.

On both flanks of Berneville, toward St-Aubert-sur-Mer and Coursevalles, were situated the main German defences from which the Germans could pour devastating fire onto the beach. On these flanking positions, Canadians of assault and western formations won their greatest glory. On each flank, three big guns were entrenched underground, each capable of sinking a battleship. These gun positions

battle on the beaches continued for almost three hours, while survivors of the original assault units were already first inland.

By the time I landed, waist-deep in beach, were cleared, but the fighting was still violent on the further flanks. Carrying out a reporter, I raced up the beach and into Berneville. In a dining room of a small hotel, still miraculously standing, about 300 yards back of the beach, I wrote my first newspaper story. Then, I returned to the beach and followed parties of the Royal Marines who were "winkling" isolated German units out of camouflaged dugouts which had escaped the notice of the infantry. The scene was nightmarish: masses of exploding mines, dead bodies, mostly German, and two German prisoners of war.

The western Canadian troops had pushed through almost eight miles inland to the outer defences of Caen. This proved to be the outstanding job done



Canadian troops wade ashore on the morning of June 6, 1944, at the D-Day invasion.

by any troops in the British-Canadian sector, and it sealed the success of the assault in our sector.

I wondered as far as I dared, the town itself and the beach flanks were alive with snipers, and mines were still exploding. The smoke of the battle still hung low over the rain-soaked. Dispersely tired, I wandered back to the hotel. The blond and pretty daughter of the proprietor served me. Through her window I could see scores of German prisoners being marched to the beach, and at the roadside French resistance were joining in with their deserters.

Darkness was falling now and German aircraft were beginning to drop bombs on the beach. I went to a bed and fell into a deep exhaustion. A great and historic day in Canadian history was ended.





**1945-1955**  
THE STRANGE FORCES BEHIND  
THE RICHARD HOCKEY RIOT  
BY SIDNEY KATZ,  
SEPTEMBER 17, 1955

ON MARCH 27, 1955, at 11 p.m., a storage bomb exploded in the Montreal Forum, where 16,000 people had gathered to watch hockey match between the Montreal Canadiens and the Detroit Red Wings. The acid yellowish fumes that filled the stadium sent

the crowd rushing to the exits, crying, shrieking, coughing and running. But it did not touch off the most destructive and frenzied riot in the history of Canadian sport.

The explosion of the bomb was the last straw in a long series of provocative incidents that swept away the last remnants of the crowd's restraint and decency. Many of the hockey fans had come to the game in an ugly mood. The day before, Clarence Campbell, president of the National Hockey League, had burned Maurice (The Rocket) Richard, the star of the Canadiens and the idol of the Montreal fans, from hockey for the remainder of the season. The suspension couldn't have come at a worse time for the Canadiens. They were leading Detroit by just two points. Richard's award for individual high scoring was at stake, too—he was only two points ahead of his teammate Bernie (Boom Boom) Gosselin.

At one time there were as many as 16,000 people packed around the outside of the Forum. For a time it looked as if a lynching might even be attempted: groups of mobs were savagely chasing in unison, "Kill Campbell! Kill Campbell!" The windows of passing automobiles were smashed and, for no apparent reason, cab drivers were hauled from their vehicles and pampered. The mob smashed hundreds of windows in the Forum by throwing bricks and bottles of beer. They pulled down signs and tore down off their hinges. They toppled corner newsstands and telephone booths, doused them in oil and set them burning.

When the mob grew weary of the Forum they moved across and down St. Catherine Street, Montreal's main shopping district. For 15 blocks they left in their path a swath of destruction. It looked like the aftermath of a wartime blitz in London. Hardly a store was spared. Display windows were smashed and looting carried away everything portable.

The cost of the riot was added up later



an estimated \$30,000-worth of damage, 32 policemen and 25 civilians injured, eight police cars and several structures, taxis and private automobiles damaged.

But the greatest damage done was not physical. Montrealers were shocked and stunned after their emotional binge. Canadian hockey was given a black reversion that front pages of newspapers as far apart as Los Angeles and London, England. "Ice hockey is rough," observed the *London News Chronicle*, "but it is now a matter of grave concern that Canadian players are springing forth compared to those who support them."

The newspapers and radio were blamed for whipping up public opinion against Campbell before the riot. Frank Hockey, of the Montreal city council, said that Mayor Jean Drapeau must accept at least some of the responsibility. Drapeau, in turn, blamed the riot on Campbell, who "provoked it" by his presence at the game. Frank D. Corbett, a citizen of Westmount, expressed an

opinion about the riot which many people thought about but few discussed publicly in a letter to the editor of a local paper. He said bluntly that the outbreak was symptomatic of racial ill feeling. "French and English relationships have deteriorated badly over the past 16 years and they have never been worse," he wrote. "The basic issue is nationalism, which is ever present in Quebec. Let's face it, . . . the French Canadians want the English expelled from the province."

All of these observations contained some grains of truth, but no single one of them explained significantly what happened in Montreal on St. Patrick's Night.

In the case history of the Richard riot, the night of March 27, four nights before the Montreal outbreak, is important. The Montreal Canadiens were playing against the Boston Bruins in Boston. Six minutes before the end of the game, Boston was leading 4-2, playing not men short because of a penalty. The desperate effort to score, the

Canadiens had removed their goalie and sent an open net. Richard was skating across the Boston blue line past Boston defenseman Hal Laycoe when the latter put his stick up and caught Richard on the left side of his head. It made a nasty path which later required five stitches. Frank Uhlman, the referee, signalled a penalty to Laycoe.

Richard skated behind the Boston net and had returned to the blue line when the whistle blew. He rubbed his head, then suddenly lay over on top of Laycoe. Lifting himself high over his head with both hands Richard pounded Laycoe over the face and shoulders with all his strength. Laycoe dropped his gloves and stalked and returned to his feet to come and fight with his fists.

A Bostonian, Cliff Thompson, grabbed Richard and took his stick away from him. Richard broke away, picked up a loose stick on the ice and again skated away at Laycoe, this time breaking the stick on him. Again Thompson got hold of Richard, but again



Montreal's St. Catherine Street in the wake of the March 27, 1955, riot following the suspension of Canadiens star Maurice Richard



Richard escaped and with another stick slashed at the man who had injured him. Thompson subdued Richard for the third time, forcing him down to the ice. With the help of a teammate, Richard regained his feet and sprang at Thompson, tearing his face and blackening his eye. Thompson finally got Richard under control and sent him to the time-out room for medical attention.

Richard was penalized for the remainder of the game and fined \$100. Laycoe, who suffered body bruises and face wounds, was penalized five minutes for high-sticking and was given a further 10-minute penalty for causing a blood-stained towel at the referee as he entered the penalty box.

Many observers felt that the Richard riot was merely another example of how lawlessness can spread from players to spectators. Team owners, coaches and referees have promoted discipline for law and authority in hockey by their attitude. They complain bitterly when referees apply the rules strictly in this new breed of hockey which permits rough play and often ignores the rules, the most harassed player in the NHL is Richard. Thirty-four years old, five foot nine, he weighs 180 pounds and is handsome in a cruel kind of a way. His intense, penetrating eyes seem to perceive everything in microscopic detail. It's possible that Richard is the greatest hockey player who ever lived. Canadiens were once offered \$135,000 for him—the highest price ever paid for a player. Frank Selke, Canadiens managing director, refused, saying, "I'd sooner sell him the Forum."

Dipping nose into Richard's talent and use rugged methods to stop him. Sometimes two players are specifically decided to murder him. They regularly hang on to him, put hockey sticks between his legs, body check him and beat him harder than necessary. Once he stood 20 feet with one knee on his shoulder in a more aggressive position. He employs psychological warfare

to unsettle him. Inspector William Menegoz, who, as police officer in charge of the Forum, frequently hears opposing players calling Richard "French pee soap" or "dirty French bastard" as they skate past.

Because of these tactics, Richard frequently explodes. But he is a ratty among men as well as among hockey players. He is so sure of himself completely dedicated to playing good hockey and scoring goals. "It's the most important thing in my life," he told me.



Richard calls for calm, telling fans he'll "take this" punishment and come back next year.

On the night of the Boston fracas, Clarence Campbell was travelling from Montreal to New York by train to attend a meeting of the NHL board of governors where plans for the Stanley Cup playoffs were to be made. In Grand Central station next morning he read about the rampage in the New York Times. Hurrying to his hotel, he ignored referee Frank Ulman and teammates Sam Sabock and Cliff Thompson to get a verbal report. Disturbed by what he heard, he set a hearing in Montreal to ascertain all the facts and decide on what punishments should be given to the players involved. The time set was two days later—March 25 at 10:30 a.m.

The hearing lasted for three hours. The

struck on Laycoe and Thompson were deliberate and persistent, Campbell found. The room was completely silent as Campbell then pronounced the punishment. "Richard is suspended from playing in the remaining league and playoff games."

No sports decision ever hit the Montreal public with such impact. It seemed to strike at the very heart and soul of the city. A bus driver became so upset by the news that he ignored a flashing railway level crossing signal and almost killed his passengers.

There were portraits of what was to happen on the night of March 17 in the phone calls received by Campbell. Many of them were taken by Campbell's secretary, Phyllis King. "They were really all about me and they seemed to grow worse as the day wore on," says Miss King. One of the first callers said, "Bill Campbell I'm an undertaker and he'll be needing me in a few days."

The strong moral feelings engendered by the decision should have sounded an ominous warning. One of the letters that Campbell received said, "If Richard's name was Richardson you would have given a different verdict."

Many prominent people added fuel to the fire. One French weekly published a cartoon of Campbell's head on a glacier, dripping blood, with the caption, "This is how we would like to see him."

A few minutes after the Canadian-Detroit game ended, Richard slipped into the Forum unannounced and took a seat near the south end of the rink. He gazed intently at the ice, a look of terror on his face. The Canadians were playing doggy hockey. At the 11th minute of the first period, Detroit scored a second goal and the Canadians saw their



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bores of a league championship go up in smoke. It was at this minute that Clarence Campbell crossed the arena. He couldn't have chosen a worse time.

As soon as Campbell sat down the crowd registered him and pandemonium broke loose. Richard was still asleep when reporters knocked on the door of his home at 11 o'clock. It was answered by his six-year-old son who said, "I hope you didn't come to talk to him about hockey." When the reporters returned later, Richard was sitting in a white T-shirt and a pair of slacks. His face was lined with fatigue. "This certainly isn't the time for me to say anything," he said. "It might start something again." By 3 o'clock he changed his mind. He showed up in French-Selkirk's office and said that he wanted to make a public statement. At 7 o'clock, seated in front of a battery of microphones, he made the following short speech in French:

"Because I always try to lead to win and had my troubles in Boston, I was expelled. At playoff time I have not to be in the game with the boys. However I want to do what is good for the people of Montreal and the team. So that no further harm will be done. I would like to ask everyone to get behind the team and to help the boys win from the Rangers and Detroit. I will take my punishment and come back next year to help the club and younger players to win the cup."

As he repeated the speech in English, Richard appeared restless and upset. He rubbed his eyes, yawned at his tie and scratched his left ear. His words seemed to have a soothing effect on the city. The question of his suspension was laid aside, at least for the time being. Mayor Drapeau and other lawmakers followed Richard with strong pleas for leniency and order. There was to be no further violence for the remainder of the season, despite the fact that the Canadiens lost the championship.

## WHAT MAKES A MAN KILL?

Do private files of a prison psychiatrist

June Callwood visits the Foster Hewitts

"How I run a marriage bureau"

# MACLEAN'S

SEPTEMBER 12, 1966



## 1955-1965

IT'S TIME WE STOPPED HOAXING THE KIDS ABOUT SEX  
BY PIERRE BERTON, MAY 18, 1967

THE MOST RECENT statistics place the annual total of new admissions to Ontario psychiatric hospitals at 9,600. Of these an astonishing 6,000 are under the age of 16. Commenting on the reasons for this, Dr. Elliott Marston, a psychiatrist who deals with sexual deviants, had this to say:



Sexual feelings of adolescents are encouraged by the mass media in our culture, but the official morality of this country is based on positivism. All early sexual experiences for this reason are unexceptional and associated with shame.

Thus Dr. Marston put his finger on the end of the Great Twentieth Century Hoax, whereby every adolescent is taught that sex is the key to everything—but he can't enjoy it for another 10, 15 or 20 years.

The popular magazines (and I do not wish to exclude this one) have for decades been a party to this hoax. In countless Polynesian articles and about boy-girl fiction they have contributed to the legends that claim that virginity is the greatest prize a girl can bring to the altar, that premarital intercourse can lead only to disaster and that continence is the only policy for unmarried people. None of these statements is necessarily true. Indeed I can think of cases where they are demonstrably false and dangerous. (Kinsey has shown, for instance, that almost half of American women have enjoyed premarital sex and that few have regretted it.)

We had better make the best of the fact that teenage sex where to say and that our adults have been helping to build the kind of society in which it flourishes. We have fashioned a world in which "popularity" is the premise to which every youth aspires, and then we have managed to equate sexiness with popularity. And we have sold this package up to the kids for straight commercial gain.

For sexual popularity is the foundation on which the great postwar teen market has been built. It is the basis of the Go-Go's syndrome—a kind of insurance that youngsters buy to make certain of continued social success through guaranteed sex. What do the ads mean when they urge us to be the Most Popular Girl in Your Class? The illustrations give the key: they show her being nudged by one or more males.

A glance at the score of magazines which live off 12- and 14-year olds shows what the commercial world is up to. These publications are almost exclusively devoted to the sexual gildings of adult heroines and their and-off romances of their teenage counterparts.

Here, in *Teen Life*, is an infant named Beverly Wolf born exploring (in an article titled *How I Started, I believe*) that "dancing is a game. There are tricks to be learned, who to be pleased." "Here, in *Movie Guide*, a Sue Lyon, the movie's Lolita, cry-

ing when teenagers mount on TV (as one did to me) that "sex is the thing to do," when a Toronto Anglican minister says that one-quarter of the young bride's stories are pregnant (an Edmonton United Church minister tells me it's closer to half with her), or when a California health officer warns 21 schools and reports that teenagers are being seduced by a culture of "fun morality" and that a good many girls consider pregnancy a status symbol!

Yet there seems no likelihood that this sort of affairs will change. Unless society does an about-face, children are going to be lured into earlier and earlier affairs that are, in effect, mock marriages in which everything is officially condoned save the final act of consummation. The being true, then, surely our attitudes are going to have to change. Having guided the teen from into a state of emotional and romantic flux to which



Berton argued that teen magazines like the one on left star girls whose only interest is sex.

ing that "I'm not a child—I do have ideas about the man I'm going to marry." *Teen* Wolf had been worried, but you can read all about her On and Off romance, while Anneke Farkelke, a Disney child star, tells us how she got her first kiss in *My Bedroom*. Meanwhile the photo books the words to make:

Don't want you? I'm a girl!  
Young and afraid  
You come to me and you give me love  
What a girl! You're my love!

I don't want you but I need you  
Don't want to kiss you but I need you  
With this profitable gibberish being pumped into every child's ear, it is really

instructed, rather than seduced, into the obvious release. We are going to have to accept teenage sex as matter of fact as we now accept the other effects of capitalism.

Specifically, I say, society is going to have to accept the fact that premarital sex is always a bad thing, what a bad is the sense of guilt, shame and sin which keeps young people or adults' length from their parents and in a state of constant emotional tension. Further, we must make much less out of virginity and continence and realize that, while they're okay for some people, they are not necessarily okay for all. The church ought to be giving a lead in these matters—after all, it was they who made the original laws about sex. By equating it with wickedness, they made it almost manurally explicable. It's no accident, as Dr. Marston, the psychiatrist, has pointed

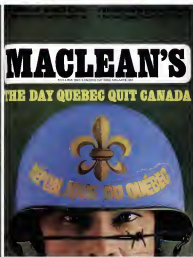


says, that "the incidence of sex problems among ministers' children is very high." It's good news that some churches are facing up to the realities of the new age. R. B. Bagley, an Anglican archdeacon in Toronto, recently wrote that the church should "restate its beliefs in sex in recognition of the shifting values among the young."

At this point I fear I hear a Greek chorus of intemperate old women scolding their slogan: "Would you want your daughters, etc.?" Well, I have several daughters, granddaughters, and I must tell you that this is not a question that haunts my slumber. They are level-headed girls and if, in a moment of madness or calculated design, they find themselves bedded with a youth (and I trust it will be a boy and not a car seat) I do not really believe the experience will scar their psyche or destroy their future marriages. Indeed I would rather have them indulge in some good, honest sex than be condemned to a decade of whumping frustration brought on by the appalling North American practice called "jacking."

Be that as it may, I pray one thing is done to them: whenever occurs, they will always have the full sympathy of their parents. They will not be banished into the snowmelt with their little hands, nor will they be made to suffer shame for acting out, to its ultimate conclusion, the latest *Mit Piss* ballet or fan-magazine fantasy. Neither will they be condemned to the hell of an incompatible alien marriage simply because they decided to learn for themselves what all the adult shouting was about.

As for my sons, I fully expect that by the age of 17 they will leave, from experience, something about life and that when they finally wed they will be wise enough in the ways of the world to make their own physically content and relaxed enough, by reason of previous experience, to make their marriages comparable.



**1965-1975**

**CRYING BROKENHEARTED OVER YOU**  
BY JUNE CALLWOOD, JANUARY 1972

**I WISH I KNEW** where my Canada is, or if it is. Since October, 1970, I've been trying to adjust myself to the realization that what I believed all my life was Canada—a land somehow more noble than any other, more valiant, brave, and open true, whatever that means—never existed at all except in my



head, where its sole function was to enlarge my vision of me, the typical Canadian, noble, valiant, brave and, especially, true.

I'm feeling wretched these days for what, at bottom, is the wrong reason. I weep for me. What collapsed when my countrymen loved the War Measures Act, levelled, anyway, can't be that I was something special because I am a Canadian, a Canadian discoverer who can trace lineage back to what Canadian history textbooks gradually call savages.

I had counted on me after all these years of being thrilled by parades, Pringles, the flag fluttering at the top of the pole, nights in Muskoka, a glimmering day after an ice storm, and assorted scenarios where the waves and rocks behave erotically with one another, that Canadians are a nasty lot, have been thorough, confidently, secretly rotten throughout their history, and that the War Measures Act just put the ongoing, established, funny, truly Canadian folk festival of Hate Your Neighbour on a firmer legal basis.

Really it's giving me pain, and it would be Canadian of me to be glad if it Canada itself were in pain. We strap five-year-olds in our kindergarten for the offence of being restless—stop being five! We hate police and prison guards who know 50 ways to hurt an underweight teenager without leaving a mark on him. We lock up the poor in mental hospitals and promise to teach them a good lesson—stop being poor! We elevate as judges, mayors, premiers, police chiefs and prime ministers those who declare that the young people will stop starving, or being young, or being Indian, or being angry, if you just punch them in the head.

What lies in the heart of everyone is a fear, and those who are more fearful than they can bear (which is just about everybody) protect themselves by being wonderful and pleasant, by giving pain, they are safer.

Canadians are very frightened of one

another, which makes them lonely, which makes them dangerous to their own kind. We put more people in prison, per capita, than any other Western society. Our prisons duplicate the conditions for making small laboratory animals insane—they are full of the destruction of young lives.

Back when I had this fantasy about the inherent goodness of Canadians, I thought we were coming out of the track. I started meeting these marvellous people all over the country, great teachers, ex-hospital doctors, nutty idealists who sometimes were



For Callwood, invoking the War Measures Act proved "Canadians are a nasty lot."

little old ladies in green shoes, sometimes were unapologetically good and correct (Joan Langbein, Vancouverites were booted young gay who brought their babies. They talked of concern and change and making monstrous humans, and it looked to me as though they were beginning to succeed).

So I wasn't prepared for what happened with the War Measures Act. I didn't expect that the country would be so delighted, enthusiastic, grateful for a national code based on hatred and mistrust. I really thought we had it figured out, at last, that the cost of developing any man's life is that your own life becomes a crush of junk.

The students demonstrated, of course. Being Canadians, they demonstrated for the War Measures Act. The protest against it at Toronto City Hall was poorly attended, the police took pictures of those who came.

I could have lived it on the night of Oct. 14 if the Prime Minister had used that televised speech to say hold steady, these are black days but believe in the strength and goodness of the country, trust in the law, which is adequate, more than adequate, to stand up to the criminals. Maybe he could have asked Canadians to shake hands with everyone

they meet for a day. That's not more, that's not bleeding heart: traditionally, the handshake is to show that you don't hold a weapon, it is a simple, effective way to reduce fear between individuals. It works.

Instead, the great Canadian tradition, persecution of the different, has been exacerbated. While the United States was central to the oppression of the New York Times reports of the Vietnam investigation, a Canadian judge stopped the CBC from airing an account of the Vietnam trial, a straightforward report of the transcripts, and I was a note in an entertainment column.

In the wish of vengeance that has followed the War Measures Act, Canadians have an opportunity to feed one world hate as what we do best, which is to hurt people. An international organization, the League for the Rights of Man, has named a Quebec prison and reports that it is "scandalous and inhuman." The investigation draws from the infamous jail of Algiers, whose torture was spectacular. So Canada is making a mark for evil, after all.

It's everybody's Canada, I suppose. Maybe it's almost everybody's Canada. My problem is I still can't believe it.



## 1975-1985

WHAT RENÉ LÉVESQUE HAS WROUGHT, HE HIMSELF MAY BE PUTTING ASUNDER  
BY ALLAN FOTHERINGHAM,  
JULY 10, 1978

**THE BEST POSSIBLE** place to be for a Canadian who is an optimist is Place Jacques Cartier on St-Jean-Baptiste Day. This is the cobblestoned square, sloping down past a grain elevator to the St. Lawrence from the curved balcony of Montreal's City Hall, where Charles de Gaulle housed his feral

"Kébec Québec libre!" Clashes of whet-faced teeny-boppers, corked on substances not liquid, hunker down cross-legged on the cold stones, wearing stief the blue and white Québec flag. A clatch of raspy voice as teenage ruckus in slow-motion syncope to the too-tapping cadence blasted out from the vintage-rock speakers high on the slope. With small emulations, then boys yowl in contrived beer-crazed belated "O'Ké!" and "Molson's" and there are cheers as they are being on the indecisive bonfire in the centre of the 15,000 beer-swaggering celebs. Ah, the Angles to the north!

Mr. And yet. One can remember, as somewhat of a Place Jacques Cartier first, a St-Jean-Baptiste Day a half dozen years ago. The same square, the same demographic slice of youthful Québécois, filled with beer and holiday abandon. Police were massed in hidden alleyways on the perimeter of Old Montreal. Riot clubs and plastic face masks were the holiday garb. A menacing police helicopter swooped back and forth over the heads of the crowd, its blinking red and green lights on the twilight mixing with the coloured balloons were aloft by defiant denizens of the drinking cubs that line the square. There was, to an outsider, something in the intimidating menace of that helicopter overhead toward a restless crowd that bore the seeds of a moment that dimmed on Nov. 15, 1976. St-Jean-Baptiste Day in the past, in fact, was very useful market research for the Parti Québécois.

Now, that anger has been vilified. The premiere park of the anglophones—not to mention the Anglo-Saxophones across the Prairies—had been subdued. Finally, oh, finally—the message had got through to the descendants of the Wemacostan Shoshone: this holiday is not their but ours. It is not mere cultural homage to the patron saint of the French-Canadian voter: it is now Québec's folk national. The mood

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and the rise of the beer drinkers reflect the withdrawing of anger.

Montreal, still the most interesting town in the country, has geographic loam unlike any other. Halfway down Place Jacques Cartier are the comfortable savings of the Nelson Hood, a familiar backdrop for the TV camera as the house base for Robert

extending a tentative sky hand to Quebec. "It is not," says a Montrealer, "like other years when Anglos stayed away from Mont Royal for fear of trouble." It is the PQ cult, spending over \$3 million to convert a cultural festival into a provincial holiday, thus turning down the national anger of this most symbolic of Quebec days.



Lentiss, the lawyer who represented the FLQ in those now dusty forgotten days. It is the stark, most immediate, of Lord Nelson that dominates this square that vibrates with the view of young Quebec.

In a courtyard filled with easily tilted tables that thence to send the beer crashing on the stones, a mezzocologist from Ottawa coaches her five-month-old daughter with a pacifier and introductions around her friends from Calgary, who, by her presence,

Celebrating the November 1978 PQ election victory at Montreal's Paul Savard Arena

The geography shifts to the invisible plains on St-Denis, the street well away from the westside of Montreal, established by students and intellectuals as their protest against the trendy tourist traps of Crescent Street, where the plastic credit cards click like crickets in the night. On St-Denis it is acid rock and the cheerful abandon amidst the beer and

dancing that English-Canadian youth cannot seem to capture without advancing into drunken escape. A disco style that uproots us? Perhaps, but now the movement is dampened, the hostility over the past six months slowly receding around the edges.

Over on Crescent, in downtown Montreal, a woman in a black New York Jets

T-shirt bounces in rhythm on the steps of La Sore Michèle, a club featuring an outdoor wall of mirrors—a tired reminder of what the 1970s thought was exciting. A hard rubber balloon, five feet in diameter, is passed from hand to hand above the heads of the throng that engulfs a block. In 1978, enthusiasts have to be provided, not resentments rejected.

There is, in Montreal, the sense that the ball has been punctured. The rearing spectre of Claude Ryan—with that roomful of face—as called the parody/Anglos of the west islands, just as it has altered the PQ into being more a pragmatic political party than an evangelical movement. There will be a different Quebec, as even the stuffy proud Pierre Trudon has conceded in his

surprising constitutional package that goes so far as to recognize the registered ideas of a Bill Remont of B.C.

Quebec has moved a long way since that tumultuous night in the Paul Savard Arena. The PQ, though it may live to regret it, has escaped the anger from the province. It is hard to imagine René Lévesque as a pacifier, but that is what he has become. The PQ and René may very well have been the escape valve, not the engine at all.

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## 1985-1995

BEHIND CLOSED DOORS  
BY BRIAN MULRONEY,  
JUNE 15, 1987

Prime Minister Brian Mulroney was asked to write this account of the marathon bargaining session that led to the June 3, 1987, Meech Lake constitutional agreement.

WE MET FOR almost 20 consecutive hours, from mid-morning of one day to the dawn

of the next. We were 11 Canadians, from diverse backgrounds, from different political parties and different regions of Canada. Around that oval table, in the fourth-floor boardroom of the Langevin Block, all the partners of Canada were trying to finalize a new deal for Canada. But the challenge was difficult. We were trying to accommodate Quebec's agenda and that of the other regions, within the national interest, and in a manner consistent with the responsibilities of the national government. It's one thing to achieve agreement in principle, as we were able to do at Meech Lake. It's quite another to reach final agreement on a legal text, representing the commitment of 11 governments.

I'm not going to pretend that there weren't a couple of moments there when I wondered if we could sustain the agreement. We had problems on a couple of points—Quebec's distinct society and the spending power provisions—where we had to address the outstanding issues and accommodate different concerns. All the pressures came through, not only for these two provinces but for the country.

The other premiers knew that Quebec Premier Robert Bourassa needed some substantial assurances on the distinct society, and we all wanted to recognize minority language rights guarantees within that framework. So there was accommodation of Mr. Bourassa's view. Ontario Premier David Peterson had some concerns as well, that were expressed around the table, and we were able to put in some companion language on Aboriginal rights and the multicultural aspect of Canada.

That was shortly after midnight, and by then we'd already been at it for 14 hours. People were getting pretty tired, but that made it quite clear that we were going to go on until we either got an agreement, or didn't. But we still had to finalize the spending



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power, and that proved to be enough one, too. On this question, the other partners needed a signal from Mr. Bourassa, and it about 2 o'clock we started to give movement.

On the question of opting out with compensation from new shared-cost programs in areas of exclusive provincial jurisdiction, many free ministers expressed preference for a working on the federal government's right to establish programs in this area; compensation to be paid to provinces that establish programs over parallel with the national objectives. I had stated clearly in the House that the federal government's right to establish such programs was unimpaired and that the wording should reflect that. This was done and accepted by all and should provide provinces with the necessary flexibility in designing programs.

At that point it was nearly 4 in the morning. I called for one last break to give them all a chance to think it over, and then we went round the table one last time. When the rounds came, everybody was with us, to the end I think we were all too tired to stand about it, but we knew we had done a good day's work for Canada.

Revolving the issue of Quebec's signature on our Constitution was one of the reasons I went into public life four years ago, and why some people, at considerable personal sacrifice, agreed to move to Ottawa with me. I outlined the principles of my undertaking and strategy quite clearly in the Septelles speech in the 1984 election campaign. Mr. Bourassa did likewise in the 1985 Quebec campaign. He came forward with five proposals that accommodated Quebec's constitutional aspirations, but were all disavowed from the perspective of the federal government and the other provinces.

Then it was up to the provinces to decide if they wanted to deal with this issue first before proving to other provinces such a delicate reform. They did so at Edmonton last year,

and that finally brought the 11 first ministers to Mitchell Lake on April 30.

Since 1982, we have been witnessing the slow but measurable emergence of two Canada—one representing those who had accepted the Constitution, and the other those who had not. This unfortunate situation could, with the passage of time, have had damaging consequences for our country. The Mitchell Lake accord means there is now one Canada—strong and united.



The constitutional talks, which included Peterson and Mulroney, ended at 5:20 a.m.

So what kind of country are we talking about here? None of all, the kind of Canada that keeps its promises. On May 14, 1990, in his famous speech at the Paul Sauvé Arena in Montreal, the then prime minister of Canada committed the government of Canada, in the most solemn terms, to "take action to renew the Constitution."

That was six days before Quebec said yes to Canada in the referendum. Now, seven years later, another resurgence of hope for our country, the rest of Canada has finally said yes to Quebec—in terms and conditions that strengthen Canada and inspire

support in all provinces and regions. That agreement is about fairness and balance. It's about achieving a stronger, united country by recognizing our diversity, by rejecting it rather than by denigrating it.

On the issue of Basic Common, nobody asked whether you were Catholic or Protestant, French or English. And in any strongest impression of Canada has always been of a tolerant society.

The final accord very much reflects that. When you lift those constitutional amendments off the page, when you strip them of the legal jargon, they tell the practical effect of bringing Canadians together—in our Supreme Court nominating process, in the Senate appointment process, in the spending power process.

And the amendments are very much in our Canadian constitutional tradition of balancing collective rights with individual rights. We're not smothering particular vision of strong and diverse cultural heritages. You see that in the distinct society clause, acknowledging the special status of Quebec while promoting our linguistic minorities throughout Canada. It's the same spirit that renewed the language in Aboriginal rights and multiculturalism.

This entire agreement derives from the Canadian experience, within one strong and united Canada. That's what last week's first ministers' meeting was about. When it was finally over, I think it was about 24 past 5 in the morning. I went down to my office to take a few minutes before going out to meet the media. All the people in our team were there. They had done a great job and I wanted to thank them.

It was getting light out. And someone in the room said, "It really is the beginning of a new day." So then we went down and out the Elgin Street door to meet with those people who had been waiting all these hours for any word.

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**1995-2005**  
STRONG AND FREE  
BY DOUGLAS COUPLAND  
NOVEMBER 25, 2002

**LAST MONTH** I awarded a literary festival in Paris. In its catalogue they listed me as American, and as the inaugural cocktail party the organizer came up to me and said, "We listed you as American in the

catalogue—oops. I hope you don't mind."

"Well, actually, I do mind."

"And why is that?"

"Because I'm Canadian."

"Oh, of course—Canadians are different."

The punchline is that the event was called "Festival America," an exploration of how the countries of North America are writing to crystallize their identities (Ginsberg whoops: outswon none here.) The other punchline is that my own writing has never been more focused on Canada and what makes us us.

This past year the Americans decided to denigrate Canadians. That's pretty obvious.

Apparently we have our terrorists, our weapons who get nominated for the Nobel Prize aren't even Canadians—they just collect their mail here—and worse of all, we are electric.

Most of us can remember the exact moment when we realized the Americans don't like us any more. It was during the post-9/11 Bush address to Congress when he stopped to thank America's very best friend in the entire universe... England. Huh?

And then their new best friend, Mexico, and then somewhere between Capetown and Cape Verde came Canada. A few years ago, our national feelings would have been stung by such a slight. But recently? So what.

Canada and the U.S. have diverged to the point where it's no longer true to say that we're essentially the same thing. Did we change while the U.S. remained the same? I doubt it. We've changed somewhat, but the U.S. has changed as well, big time, and we've simply decided not to go along for the ride.

So, undeniably, Canada has become different from the United States—we all feel it. Not superior and not worse, but undeniably different. Oddly, Canada's process of differentiation is occurring just when it theoretically ought not be happening, our country is being hoisted by free trade agreements, and transpired by American media from every conceivable outlet. So what's up?



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I don't think the Americans would bother demagoguing Canada unless they had a goal in mind. Americans are long-term planners, while we Canadians get so much trip from one short-term problem to the next. If we have a national flag, it's our inability to drink long range. What the Americans want is most likely our water, our power grid and, most of all, for our natural resources to not compete with them in an open market.

I think about the Canada U.S. rivalry squabble more than most people because I travel extensively and work almost entirely in the global arena. Some Canadians like to think of me as American. The Americans like to think that I'm British, and the Brits all think that I'm German because I was born on a now-defunct Canadian Forces base in Germany.

Some Canadians still glow with a bit of strong nationalism left over from the nation's alien occupations of the 1960s and early 1970s—the era when Canada's sense of self was formed. Obviously it's good that nationalists flourished then, or we'd probably be one big Ohio by now. But there's a big need to get past that and develop a new viewpoint, and it's this which perhaps defines best the modern Canadian moment.

Americans have lately been upset by the day-to-day of Canada's military, and our nation's reluctance to dive-tackle whatever accusations have emerged from Washington. Most people live in Illinois, Michigan and Ohio combined in Canada. Imagine if you told these three states that they had to protect everything south of the 49th parallel, almost up to the North Pole, and they had to do so using only their own economies, with no subsidization. They'd call you nuts, and yet this is exactly what Canada has to do.

I suppose that if human history has taught us anything, it is that, in the end, everybody unites everybody. And one day Canada will be invaded. Most now yearn, then in the

year 23884. We simply might not be here to watch the first valley of Iam.

From a military standpoint, Canada is incredibly, justly, deliciously invulnerable. untold millions of square kilometers of land defended by a small military. Theoretically, if Canada is invaded, the United States will come to our aid. But what if it's the U.S. doing the invading? Well, that's hardly



From a military standpoint, writes Coopland, "Canada is deliciously invulnerable."

is new thought, and long ago the Americans did invade us, but obviously they gain some thing by not invading us now. What might that be? Hard to tell. Canada was always selling grain to the Soviets, and I've often wondered if there was a bit of U.S. jiggling in there—grain traded for space needed for a nuclear power expansion in Ontario. That kind of thing. In a similar vein, Canada never cut ties with Cuba, making us a convenient back door for American-Cuban services of whatever nature. And for what it's worth, I've always had a hunch that members of

various relocation plans end up in Winnipeg, not Seattle or Portland, as they always do in movies.

Every year I think most Canadians have a few butterflies in the stomach moments as they picture in their heads the day of invasion. Maybe it will be the Americans. Maybe it will be the Chinese. Maybe it will be thousands of Danes attacking Halifax in brightly coloured, affordable sailboats. Or the Russians bludgeoning the empty wastes of the Yukon. But we all know the sensation of vulnerability and of how sickening it might feel to be imperilled. Some people become fearfully, nervously angry when the butterfly-flying arrives—we're not them at parties—and it's when I see people getting this upset that I wonder if that's how the First Nations people must have felt once it dawned on them that the European settlers were, in fact, on strike.

One dark and obvious question that is as away as it is almost heretical is: why hasn't the U.S. taken us over yet? One supposes they could do it in 30 minutes; they may well even have an ARBOR CANADA button on the Oval Office desk. What prevents them: military assistance? Right. And somehow, fear of international outrage doesn't seem like a deterrent. So perhaps we need to rephrase an equally heretical question, which is: why do they allow us to continue to coast? A cynical answer might be that it's simply cheaper and easier to let Canada take care of itself. Americanizing Canada would only add to the cost of an upkeep. An unneeded Canada is a cost-effective good buddy—how depressing. But it's not just Canada. The U.S. could rule over anybody, really. But they probably don't do it for exactly the same reason. We just happen to be over done, so it seems more inconceivable.

The second heresy is that if we were to remain a country, we have to continue being Canadian. That's news indeed.

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MACLEAN'S 100



## FLASH FORWARD

We were promised an end to gridlock and our own personal helicopters. The future just ain't what it used to be.

**MACLEAN'S HAS ALWAYS** been drawn to imagine the future, right from the first year of publication. That forward-looking pre-occupation has brought a long list of distinguished writers, from Thomas Edison and Winston Churchill to Orville Wright and H. G. Wells, into our pages.

They forecasted innovations decades before their arrival. Maclean's readers could imagine air conditioning and electric dishwashers when most people were still getting around by horse and buggy. Over the years, writers sagely predicted the fundamental

importance of oil, the shift to a public health-care system and the prospect of artificial intelligence. Hints of genetic engineering and human cloning appeared as far back as 1931.

Of course, forecasting is a *dirty* endeavor, and the record is decidedly mixed. The automatic cooking and serving machines never materialized. Neither did the lunar helicopter or the automatic bed-making

machine. (We didn't even see "spidee" grandmothers who'd be able to fly the "planes of tomorrow".)

Couldn't end up saving traffic congestion in the cities, and the father of human flight guessed wrong about the physics of large passenger planes.

Even now some projections feel particularly fanciful. It seems a stretch to expect Douglas Marshall's vision of an "intellectual crisis" to materialize by 2067. But perhaps we're foolish to doubt it. After all, as Sir Oliver Lodge told us in 1924, "any invention which humanity really wants to do will probably sooner or later be accomplished."

STEVE MARCH





means ample time for crossing in each direction at street intersections, at the same time without causing undue congestion  
—*"The Future of the Motor Car," May 1915*

#### WAR FOR OIL

The progress made off years with petroleum as a motive power is remarkable. It is

Ottawa's ByWard Market in the 1930s. Few cars wouldn't be a problem, Ottawa's said

evident that, in case of a war, the country which had no petroleum resources would suffer in the contest.

—*"The Fuel of the Future—Is Oil to Secure the Motor Power of Commerce?" June 1913*

MAY 1915

*'The adoption of the automobile means the saving of the space formerly occupied by horses, in many cases amounting to half the total length of the vehicle. They will solve the traffic problem.'*

—*The Future of the Motor Car*

#### WHAT KING

What does roads expense among the cereal flour and is likely to maintain its position. Still it is undoubtedly in the development of industrial processes that we shall find the solution of the problem of economically converting corn and similar products into human food which will be palatable and nourishing. A good beginning has already been made in the manufacture of starch and glucose as well as breakfast flakes from corn. These and similar industries are bound to grow rapidly.

Does this mean that we shall all in time raise vegetables? No, there will always be food for domestic animals and meat and dairy and poultry products will always be important in terms of human diet. The amount of meat consumed, doubtless, will decline and a reduction in this respect may take place without danger and without detriment to the race.

—*"The Food of the Future—What Our Great Grandchildren Will Eat," September 1914*

#### WRIGHT ON WINGS

We see no reason why the day of aircraft as large as ocean liners, but these are merely vain imaginings. We shall have no seaplanes as large as the Lusitania. Anyone who understands the fundamentals of air mechanics will immediately understand why it is so.

The aeroplane is a method of transportation that works best and least expensively in small units. We can get better and cheaper service out of two seaplanes of moderate size than we can get out of one

26

Maclean's Magazine, December 1 1932

## REVIEW REVIEWS

### Wells Looks at the Future

English writer predicts disaster for world unless new viewpoint replaces the old

By G. WELLS

IN 1918, Huxley (1864-1922) predicted that the world would be the first to see the end of the world.

"We are a world of half-baked people," he wrote, "half-baked in the sense that we are half-baked in our minds and half-baked in our hearts. We are half-baked in our minds because we are half-baked in our hearts, and we are half-baked in our hearts because we are half-baked in our minds."

Wells, in his book "The Outline of History," has written a series of essays which are a study in the history of the world. He has written a series of essays which are a study in the history of the world. He has written a series of essays which are a study in the history of the world.

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G. Wells

He is pointing out the danger of the world unless we have a new viewpoint.

December 6, 1932









on the device and then played back to them, via a small loudspeaker, all messages left while they were out.

In suburban areas, in farms and in open country, by 1955 we find a good number of portable radiophone sets, with a range of four or five miles, in use. Such phones are also used by tractor crews—who may be out of sight of each other—on big farms. For while these 1953 radiophones were tried in cities, but soon every available wavelength was jammed and the confusion was appalling. Now only police, fire, hospital and public service vehicles are allowed to have radiophone apparatus. All physicians can, of course, be reached by this method.

—“Electron Magic,”  
Craphone Post, Dec. 15, 1943

#### TOO FAT TO WALK

Physical fitness expert Lloyd Percival, who started Canadian parents by saying their children were developing “TV legs,” is warning another shock for them. His tests for muscular fitness indicate that more than half of Canada's children are at least 90 solid hours of exercise short of being fit. Unless our physical inactivity, including TV watching, change radically, Percival made the startling (and only slightly tongue-in-cheek) prediction (as Maclean's) that three out of four youngsters in the next generation will be too weak and fat to walk around.

“Change the family's habits of exercise,” Percival says. “In Canada our six-year-olds are fatter than nine-year-olds, which shows a lack of training.”

“In Russia,” he adds significantly, “85 per cent of children pass these tests.”  
—Maclean's Preview: A Look at Tomorrow in Terms of Today, Mar. 29, 1958

*Fitness expert Lloyd Percival made the startling prediction that three out of four youngsters in the next generation will be too fat to walk around.*

—A Look at Tomorrow in Terms of Today



December 16, 1943

#### TV INTERVIEW

Looking for a job? How's your television presence? Future service for employers (exhibited at the Canadian National Business Show in Toronto) will be a closed-circuit

TV hookup by which employers dash employment agency asks for help, is quickly shown a whole raft of workers' qualifications, interview one or a dozen on the air and has a new worker on the

job within half an hour.  
—Maclean's Preview: A Look at Tomorrow in Terms of Today, July 5, 1958

#### THE NEXT SHAKESPEARE

"We will learn how to control the development of the child in embryo and thus prevent mistakes in body formation before they happen," says Nobel Prize winner Dr. Herman J. Muller, of Indiana University.

The parents of the future will have a more ethical attitude toward fertility and "will certainly restrict the number of their offspring for the common good. It will also be regarded as a social obligation looking up to the world's human beings as forcibly equipped by nature as possible, rather than those who simply inherit their parents' peculiarities and weaknesses as closely as possible.

"Faster pregnancies (artificial insemination) will be widely welcomed. This will provide the opportunity of having a child free from reproductive cells

derived from persons who exemplify the considered ideals of faster parents. These reproductive cells will preferably be derived from persons long deceased so as to permit a better perspective on their worth. For this purpose, banks of deep-frozen reproductive cells will be maintained, and also multiplying cultures of them."

The exciting tolerance—Shakespeare and Darwin: "Inheriting" children: decades and even centuries after their death—was not made by Dr. Muller or any other scientist. But Dr. Muller suggested something nearly as astounding: Through sexual or "virgin" birth it may become possible for the offspring to inherit his hereditary equipment entirely from one individual with whom he is so identical genetically as if he were his identical twin.  
—A New Look at the Future of Man,  
Oct. 25, 1948

#### INSTANT MARTINS

If the experts are right, Canada in 2067 will be an intellectual utopia populated by the

elderly but dominated by youth. Our most potent systems will be fully integrated and nerve-powered, quasi-per surgery will have solved the problems of aging, and sperm bank blocks will cover into minimum self-controlled cases.

If that all sounds too organized for comfort and mildly depressing, there's more to come. McLachlan will regrettably, meet and finish food will be one a year away and children will become wards of the state virtually from the nursery school stage.

Constant reaction controlling or eliminating the force of gravity could eventually revolutionize all most precious transportation techniques and concepts. It may even be that the wheel will disappear.

L.H. Johnson, president of Canadian Generalist, predicts that even 50 years from now, a typical businessman's lunch will consist of martinis made from instant alcohol and a reconstructed Spanish dish,

followed by a ham omelette (the egg is still around but the ham comes from a separate base) and selections from a tray of dessert cubes.

It is interesting to note that a similar set of experts, interviewed by Maclean's back in the late 1940s, scored a general average of 10 in most of their predictions about what would be happening in the last 1960s. By now, it was prophesied, we should be flying the Atlantic for \$100 (cheapest commercial flight is still \$233 one way), going to work every day in a helicopter, reading futuristic newspapers fed into every home by radio probes, living in all plastic houses and surviving on one pill of concentrated food compound a day.

One of the all-time lows in the forecasting business was scored by C. D. Howe. In 1948, just four years before CBC TV went on the air, Howe predicted that television would not come to Canada for many years, "if ever."

—"Canada in 2067,"  
Douglas Marshall, May, 1967



Marshall McLuhan by 2017 McLuhans would "bring approval to intellectual Canada."



JOHNNIE WALKER



## SAME OLD NEW

Allen Abel saw the future back in 1964.  
It's not getting any fresher.

**"THERE'S A GREAT** big beautiful tomorrow" they said at the World's Fair, "starting at the end of every day."

I was watching for a window on the future, and I thought the great exposition would be the best place to find it. And I was right—I saw robots that stood and talked, giant ferris wheels, a monorail and visions of colonies in outer space.

That was in 1964, at the New York World's Fair at Flushing Meadows. I was 14.

Now I am 35 and sweating with the millennium multitudes at Expo 2005 in Aichi, Japan, just outside the city of Nagoya. What do I see? Robots that stand and talk (and play the cello), giant ferris wheels, a monorail, and visions of colonies in outer space.

The future of the future, it seems, is the same as the future of the past. Why is that? At the Matsui Toshiro Pavilion, my guide and I have our photographs taken as we

enter. (For the Japanese public, this usually means a four-hour wait.) Then we watch a film about "the distant future," when Earth no longer is habitable and we "Space Children" must seek a new home on a far planet.

"A large number of projections, electronic equipment (including 1,700 speakers) and special effects create for the guests the sensation of travelling through space," says my guidebook.

Sorry, that last bit was from the Mitsui Pavilion at Expo 1970 in Osaka. (Yes, I was there, too. And I kept off the World's Fair grounds for a long, long time.)

Back to Expo 2005—and what do you know—one of the Space Children is me! They've inserted my digital image into the movie! It's the Futurcast System—an "episode making world first in entertainment."

Top: World's Columbian Exposition, Chicago, 1893; right: New York World's Fair, 1964





The theme of Japan's Expo 2005 (bottom) was *Nature's Wisdom*—How long can Man go on meeting ever-increasing needs for energy and raw material to serve the world's soaring population? What, says Aichi, that was Expo 67 in Montreal (above).

# The Truth Needs No Translation



**Own The DVD October 4th!**



according to the pavilion brochure.

The battle for human survival begins. Standing in our way is "a giant amberlike-shielded giant." Brave defeat is—humble for Allen!—and the Space Children are Able to return to Earth.

There is a theme to Expo 2005—Nissan's Wisdom. Or, as my guidebook says, "How long can Man go on rising over-increasing needs for energy and raw material to serve the world's soaring population?"

Oh—that was from Expo 67 in Montreal—a pavilion called Man the Producer.

"To create a more efficient global community," we are told, "we must reach a better understanding of the interaction of people, dwellings and the environment with technology and science."

This was Expo 1985 at Tsukuba, Japan, up near Tokyo.

How about a computer that uses a "light pen" to transform an image sketched on a video monitor into a patterned switch of synthetic fabric?

That was 1964—the IBM pavilion at HemisFair in San Antonio.

You get the point.

Back to 2005: what does the Hitech pavilion have to store for us? They have Mind Reality, a Personal Information Viewer, and the Ubiquitous Entertainment Robot.

We walk through a room that contains a cinematic cut-out of charismatic endangered animals. When we point our Nature Viewer at the display, we see a short video about the creature. Then we sit in a roller-coaster-type carriage and a hand sensor is taped to our palm. As the ride proceeds, 3-D images of turtles, gorillas and elephants magically appear—and we can make them move with just a wave of our finger.

At another pavilion, a pair of moving sidewalks slowly guides us past the still frozen head, and the stump of a wing, of a Liberman woolly mammoth.

In New York in 1964, an identical conceit swept us past Michelangelo's *Pietà* (*The Moving Speed Walk*).

Never mind that—on to the New Energy and Industrial Technology Development Organization NEED Technorama!

"See it, touch it, and feel it! Japan's high

tech will amaze you!"

But first, put on your 3-D glasses and look at the big robot.

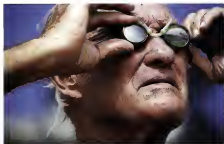
"The wisdom and power of all the people of the world will be brought together, and a great movement that unites a truly harmonious future society will unfold," says my pamphlet.

This is from Expo 2005. But here at Aichi, we see the same future that we always get at the World's Fair, whether we are young or old, whether we are home or far away: Faster trains, sleeker cars, smarter robots, smarter conquerors, brighter dreams.

At always, they are dreams of communication, of shortening distances, of healing a wounded world. New technology curing the unforeseen consequences of the old technology. The abolition of absence.

A lower talker by the hour was a cylinder, and his sweet little brain as though the thousand languages were but a yard.

It is a charming facet of the disease of loss. But that was from the World's Columbian Exposition in Chicago in 1893. And, no, I wasn't there.



**THE BALLROOM** is rich with gift and crystal and mounds like Versailles, even le daffodil. High above me, eager swans and under modern daffodil in the garden of a doorman's engine I look up and wonder: will we do any better than they did at predicting the evolution that will shake our lives?

On a scorching July weekend, I am at the annual convulse of the World Future Society, sitting in the sadism in the magnificent Grand Ballroom of the Chicago Hilton. I am taking notes with risk and paper, the state technology that the royal secretary used when Marie Antoinette commanded, "Pfff, take a moment

'Tis 'em eat cake!"

At the podium, a meeting public speaker, grand-sponsor and self-promoter per co-chairman named Ben Dyckhoff is regarding us with an arsenal of demographics, opportunity and doom.

"What if we've got part of the future right?" he challenges. "What if we've lost the future?"

More power with reduced emissions?  
It's no longer a flight of fantasy.

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## CHICAGO HOPE

Half the people at the World Future Society conclave are old white men with mortality on their minds



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**TOYOTA**



Maclean's presents

# LIZZIE'S CENTURY

BY ALLEN ABEL

"WE ARE DROPPING on the verge of another great epoch in the world's history," Thomas Edison wrote in this magazine in 1906, and, a century later, the groping continues. The mysteries of the past illuminate the suspicion of the future, in a cycle that never ends.

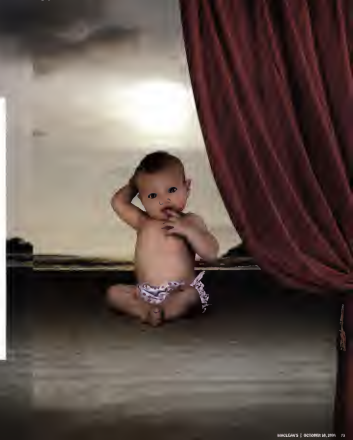
Four months ago, my wife gave birth to a baby girl named Elizabeth, satisfying the most elemental of all human yearnings, and launching a new century of wonder that our perfect new Canadiana, we pray, will live to see. In this special issue, a father's dreams and fears for his little Lizzie's life journey merge with the omniscience of Maclean's. My questions are manifold: how will my baby girl—and your children—grow and love, learn and travel, suffer and heal? Will they see and sense the world their parents knew, or are they to inhabit a great epoch of machines and molecules far beyond our meagre understanding?

Some of the answers will come from science, some from philosophy, some may be beyond our knowing at all.

I have spent the summer of 2005 in conversation with extraordinary men and women from a dozen countries. Their expertise ranges from the manipulation of human genes to the search for life beyond the stars, from the resurrection of the woolly mammoth to the biomimetic bed of the future.

I've met futurists who forecast the death of death itself, and a robot that can play the slide trombone.

What follows is the fruit of those remarkable conversations: a groping toward a future history. No one can predict what path my Lizzie will choose to travel, or even if she will have such a choice. What is certain is that much will be different in her lifetime, perhaps better, perhaps far worse. For the sake of all our children, then, we embark on the journey of the century.





# 2015

Chapter one

## THE CHILD OF THE FUTURE

Will poor Lizzie's brain be prodded and probed from kindergarten on?

*And through all the world go our children, our sons the old world would have made into swift cloth and shapen... our daughters who were... anxiety-racked mothers or sons, repeating fathers, they go about the world glad and brave, learning, living, doing, happy and rejoicing, brave and free.*

*Something indeed I must have foreseen—or else why was my heart so glad?*

—H.G. WELLS, IN THE DOOR OF THE FUTURE, 1908



**SHE IS** A female Canadian of European ancestry, the helix to three passports, two languages, and one eschewed family, born on the 14th Sunday morning in May, in the Christ year 2005. If health and fate preserve her, she, and her infant comrades, will live to greet the 22nd century, and perhaps to remember the old world once which they were delivered by a mother's pain or the shop of a surgeon's blade.

Between now and then—between the known and the unknowable—lies the chance of my little daughter's future: Lizzie's century.

Look back 100 years and the world seems not so unfamiliar—electricity and railroads, automobiles and telephones, farms and cities, jobs and schools, wars and elections, the World Series and the Stanley Cup. Men and women—my daughter's great-grandparents, your foremothers—ascended for stardom and sailed toward a better life in a brighter land.

Look ahead 100 years and the vision is vastly different—century dominated by super-intelligent machines, where death is optional, imperfect children are impossible, disease is unknown and Nature is a fading memory. Such is the world that the futurists prophesy. They have told me:

"At some stage, we'll begin to have problems with machines that can out-think humans, and there's nothing that humans can do about it. Of course, at that point, if you're a cyborg, you're okay."

"We'll become prisoners of our own immortality—we won't go outside, we won't get on a plane. Why ruin a 100-year-old life?"

"A pill for shyness. Full sexual pleasure with no outside stimulation. Digestive feelings and artificially stimulate the brain to feel them. Internet outside. Smart skin."

"A scanner in your shower measures your body fat and emits your personal criterion. It knows you are that digital piece of yourself."

"We used to think that love was about the intimate contact of flesh. That cannot truly be redifined what friendship and love really mean. A lot of people feel love for someone that they don't even know."

"Baby, if you don't have a TV, you're seen as quite strange. Soon, people will say, 'You don't have an iPhone!'"

"What if reproduction is separated from partnering? You marry the person you love, but you select your children from a marketplace of discernible genes."

"The Bible says that human beings were created in the image of God. If we find life on other planets, and we can communicate back and forth, do we send missionaries to them?"

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## FROM SPACE TO RACE: THE ROAD TO TOMORROW

History shows that the feared prognostications can often be left wanting. (Remember how computers, email and the Internet were going to usher in the paperless society?) No matter. Predicting the future gives us, if nothing else, something to dream about. Here then, a few gleaming—scientific or otherwise—from various prophets of tomorrow: what we know and what we think we know will happen over the next century.

### 2010

- Studies of Star Trek's automatic translators allow us to converse in a foreign language.
- Jan. 25, the longest winter eclipse of the 21st century as the Moon passes in front of the sun, leaving a ring of light.

- Feb. 15 to Feb. 26, the Winter Olympics in Vancouver and Whistler (it they ever get the road built).
- April 5, human population parades through the seven-billion mark.
- Construction of the International Space Station is completed (assuming the dust bunnies on the aging shuttle fleet hold).
- A General Motors unveils the Hy-wire, a car that runs on hydrogen fuel cells and replaces mechanical linkages with electronic wiring. Without engines, steering columns or other conventional components, car design will change radically.
- Fibre optics and spread-spectrum radio technology lead to an enormous jump in bandwidth.

### 2015

- Demand for oil will increase from roughly 75 million barrels per day in 2000 to more than 100 million barrels.
- AIDS will eat up more than 50 per cent of health budgets in the hardest-hit countries. In

- some African nations, average life spans will plummet by as much as 10 to 40 years, leaving more than 40 million orphans.
- Nearly half the world's population—more than three billion people—living in Africa, the Middle East, South Asia, and northern China will be starving and "water-dressed."
- A sick person's DNA profile will allow doctors to better tailor treatments for a wide variety of diseases.
- Biomedical engineering, biotechnology and "smart" materials will lead to new surgical techniques that include better replacement parts, and stem cells to augment or replace broken or body functions and structures. Improvements to sensor and neural prosthetics will mean better retinal and cochlear implants and the bypassing of damaged nerves.
- Genetic modification will improve the engineering of organisms to increase food production and quality... or not, depending on who you ask.
- A knockout will be commercially cloned.

# Your doctor will slip a bonnet on your head and it will announce the first warning signs of dementia

is the work of scientists, engineers, peddlers, prophets and dreamers. In this centennial issue of *Maclean's*, we'll meet several of each, the authors of all those gaudy quester novels above.

Some of them forecast rain and chaos, while others see a golden age. Many of them speak with confidence and hope about the wonders of genetic manipulation and nanotechnology, wireless communication and Internet refrigerators. They talk glowingly of sensors in our eyeballs, transmitters in our skulls and even idiosyncratic Freud.

Don't rise up, various prototypes of the caps that will monitor your brain's electronics.

And then there is the Venezuelan "crazy humanist" I met in Chicago in July who plans to deep freeze his own severed head, for reattachment to a disease-proof robotic skeleton or so. We'll greet him again in the year 2145, just in time for my Lizzie's 190th birthday—and he 143rd.

Meanwhile, the rest of us are wedged in 2005. As a new father, I marvel more at my daughter's joyful spirit than at any cutting cyber-stuff or gadgets. There, the most fundamental question of the century unfolds the secrets, and the survival, of the human mind and soul in an age of mindless and wires.

I wonder, should my head be shaved for

Lizzie's coronation, will I recognize her as a human being, as my great-grandfather would recognize me? Or will she be so augmented and implanted and genetically modified that she—and your kids—hardly will be human at all?

Seeking the answers, I began my quest in Tokyo, on the campus of the RIKEN Brain Science Institute, the world's largest research centre devoted exclusively to the study of neurology and intelligence, both biological and cybernetic. Among the goals that RIKEN has set for itself for the year 2017 are: a complete understanding of Parkinson's disease, Lou Gehrig's disease, Alzheimer's disease, epilepsy and Down's syndrome,

### 2020

- World population hits 7.6 billion.
- More text, images, audio and video are produced and consumed digitally than there is human people—living in Africa, the Middle East, South Asia, and northern China will be starving and "water-dressed."
- A sick person's DNA profile will allow doctors to better tailor treatments for a wide variety of diseases.
- Biomedical engineering, biotechnology and "smart" materials will lead to new surgical techniques that include better replacement parts, and stem cells to augment or replace broken or body functions and structures. Improvements to sensor and neural prosthetics will mean better retinal and cochlear implants and the bypassing of damaged nerves.
- Genetic modification will improve the engineering of organisms to increase food production and quality... or not, depending on who you ask.
- A knockout will be commercially cloned.



plasma greets who now walk around with fiber-optic headsets stuck in their ears and look like computer cyborgs.

■ Telemedicine goes the other way: a doctor can place a probe in their cells that are then persuaded to grow into functioning organs. Nine months later, the first stem-cell-sperm child is born.

■ Cybernetics leads to brain implants that will enable us to communicate with computers, stem cells and electric wire. A microchip implanted in the motor cortex just beneath the skull will allow a paralyzed person to move their arm to a computer, which will forward their words.

■ A microchip implant and a wireless receiver are implanted in a tooth. The vibrator acts as a microphone and speaker, allowing sound to travel along the jawbone to the eardrum. This will be useful for all of the rabid rockers who

- cannot produce cones in their eyes (red, green and blue) to blue, enabling us to see new things that we can't even imagine now.
- A bioengineered mouth with heart cells will be placed directly in a coronary bypass after a heart attack and contract just like the rest of the vital muscle.
- We reach Werner Vonage's deadline for antiquities, the point at which technology gives rise to "relics with greater than human intelligence."
- Closest thing achieved: 1994's Apollo will pass within 35,000 km of Earth—missing us by just one-thirtieth of the distance between our planet and the moon.

### 2040

- There are now 6.7 billion of us.
- Physicists figure out the origins of the universe, a human brain is successfully copy-pasted. We'll be using fully compact cars, bicycles and our scooters to ride to Wal-Mart, the only grocery chain in the world.

and instruments for all of them, • the production of a "brain-style" robot, • the production of a computer with emotions and consciousness, one capable of living with humans.

Before my Little girl goes to high school, then, they can build her an artificial boyfriend.

In a laboratory on the second floor at RIKEN, there's a man in a sporty red life-size version of the Sorting Hat at Hogwarts School. It's a bathing cap fitted with 256 electrodes, designed to monitor your brain's external electrical activity and to determine if it is starting to wobble.

This is just a simple prototype. Someday soon, your doctor will slip electrodes on your head and it will announce the first warning signs of dementia or disease. Or it will be placed on your newborn's crown at birth and the pinpoints will reveal whether she's on her way to Oxford. —*or* Margaret Perle

"We are very close," says Andrius Cichocki, the Polish-born head of RIKEN's Laboratory for Advanced Brain Signal Processing. "In the near future, we will be able to screen someone at 55 and predict Alzheimer's disease with high probability. Predict, yes, but not cure. But we can give you a first warning—on time to maybe change your diet, maybe change your lifestyle, maybe start yoga."



Electrodes in eyeglasses could help the handicapped communicate with robots

That's just the beginning. Cichocki and his colleagues intend to design a sensor that can forecast behavior and temperament as well. The implications of this sort of neural monitoring are vast, and potentially alarming. "The key of our research is how one part of the brain transmits information to another part of the brain," he says. "We want to learn how this operates for athletes—an educated person's brain, a non-educated person's brain, a child's brain, an aging person's brain, a criminal's brain."

It is a way to visualize poor Little being brain-capped on her very first day of kindergarten, a smiling five-year-old being probed for everything from musical riffs to the potential for murder. "Does he have the right to say to a person that he has the inclination

to commit?" Cichocki muses. "These sensitive people who commit crimes, they don't have normal brains. If we can discern this pattern in advance, maybe we can cure these people. But that means mass screening."

"Let's say that someday they test my daughter as part of a job evaluation," I suggest. "And if the results look suspicious, the boss fires her, she loses her health and life insurance, and she'll never get another job."

"That is not an unresolvable problem," Cichocki shrugs. "Our immediate goal is to be able to tell a child, your parent is seriously ill. He's not just old and stupid."

In Cichocki's view, advanced brain signal processing unlocks the swinging door to unforgotten wonders. There's no need to drill into the cranium—as often you'll meet in this magazine an proposing—as much a common board. It will read what you're thinking—or make you think what it wants.

"Maybe we will put electrodes in the frame of your glasses," he suggests. "It could help the handicapped and blind people and the elderly communicate with robots. You would just have to think and the robot would sense your emotional state and try to make kind conversation."

I am personally against chips being implanted in the brain. This has often a non-invasive approach. You put the cap on your

> Automated vehicles and traffic control will blend road and rail • New York to Paris on half an hour—super-sonic and hypersonic travel becomes possible on an intercontinental route. The food will rack.

**2050**  
• Population climbs to 9.1 billion  
• Scientists figure out how life on Earth began after major solar biologist sequence the genomes of all species and unravel the genetic profiles of individual humans  
• Genomics and electronics combine to create a worldwide genealogical network that includes almost all humans born in 1946  
• Squirrels after 1900  
• The availability of fresh water is now limited only by the energy costs of transportation and desalination

**2060-2070**  
• Hydrogen fuel cells result in the universal

combustion engine and fuel cells going the way of the dinosaur. Perfect auto • Vertical take-off and landing (VTOL) vehicles become popular • A genetic engineering of humans creates a bio-life super-race

**2080-2100**  
• Human longevity increased by 40 years • VTOL aircraft will be cheap and safe enough that they will become as popular as cars today • Airplane record and airline everything they ever see, hear and say—leaving their good children to select the new and wonder why • Most of the planet uses a common currency based on the greenback • Unmanned satellite observatory has been established on the far side of the moon



• Humans will learn what all they will ever know about the laws of physics  
• By the end of the century, there'll be between 30 billion and 12 billion of us, maybe. Male and female, distant and perhaps sinister than us, robots or super-humans, they get have a thousand to say about our numbers, a travel faster than the speed of light becomes possible  
• An immortality chip allows humans to upload into cyberspace  
• Expect fewer species. As one observer put it, "We don't know yet if this will be mostly a storm, a tragedy, or a catastrophe."  
• Unlike in the 30th century, the 21st century will finally give rise to a technological boom as from long continents and cramped coasts. No, really  
• Every person—women, man and child—has access to computerized phone, fax/fax, video capabilities in the palm of their hands, offering access to education, work and friends and family

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stall and while you sleep, you can learn a language or mathematics. Maybe this is dangerous, to bombard the sleeping brain with millions of bits of information. We do not know that yet. But the bat has many potential uses. It could be worse even while making love."

**WITH THIS HAPPY** thought in mind, I venture down the hall way, seduced by the hard perfume of 5,000 tanks of fish.

This is the aquarium of Hiroshi Okamoto—a zoo-fid of truly long ichu fish, a potential key to how the human brain develops, cell by cell and neuron by neuron. These neurons, which Okamoto is studying "almost para-mentally," may prove to be crucial to building that "human-style robot" that RIKEN promises by 2017.

The Okamoto team is ordering with the genetic structure of ichu fish and watching how very subtle mutations in their genes affect the structure of their adult brains (Some of the fish end up with no eyes, but that is part of the engine.) Figure out how



Tweaking genes of the ichu fish, and looking for changes in the brain, may help lead to smart robots

cells of fish too small for sailors, out here in the Tokyo suburbs.

"The capability to recognize novelty is an important quality of the brain," Okamoto says. "Secrets are now being unlocked only when we decide what we're watching in a novel is it transferred into a memory circuit. That's probably the origin of our memory. The brain must have that sensor or it would become overloaded. We'd remember everything."

"Memory is driven by emotion. Emotion

against members of the same species. Does that count?"

I suddenly realize that I'm sitting at a prestigious Japanese scientific institute, asking whether fish—and computers—can fall in love.

"Love, love, love," sighs Okamoto. "Maybe in 30 years, robotics will achieve the stage at which they can mimic our understanding of brain function. Then we could produce a robot that can feel, detect novelty, and categorize memory according to its value to himself. A robot with an objective way of understanding the world. That may be terrifying, or it may also mean robots that can love. But love is very closely linked with reproduction. Robots probably won't reproduce by themselves, so I'm not sure you should give a robot the capability to love if it can't reproduce."

By this point, I'm picturing Lizzie bringing a humanoid home for dinner and saying to me, "Dad, I'd like you to meet G-402B." But more about robots a little later—in 2035.

## I'm picturing Lizzie bringing a humanoid home for dinner. 'Dad, I'd like you to meet G-402B.'

the fish brain, and by extrapolation the human brain, fishermen said "from a handful of cells, and might be possible to assemble a laptop with legs that is a lot smarter than we are."

"I'm getting more optimistic about understanding the brain in the next 10 years," Okamoto says. He's a roly-poly guy in a suspenders with a 14-year-old son and a passion for a Japanese Japanese superhero called Astro Boy.

According to the experts at RIKEN, the crucial difference between "I" and an "It" is our built-in curiosity. So far, computers compare only what we ask them to. But that will soon change, thanks, perhaps, to 5,000

attaches each memory with a value and decides whether to store it permanently."

"How do you know that fish have emotions?" I ask.

"I can definitely say that fish have few," Okamoto replies. "If the heart beats faster and the body temperature increases in the presence of a predator, that means fear, and the fish show that."

"Do you think they love each other?"

"I think so. They fight to protect their family

**FOR THE FIRST** few years of her life, Lizzie's world probably will not be that different from today's. That means a constant bombardment of "reality" television, booty-call music videos, internet cat videos and nipple magnets.

Lucky girl.

Like most of her peers, she probably will reach puberty a year earlier than her Muscogean mother did at age 13, but whether that is due to hormones or artificial chemicals in the environment, is still undetermined.

Can fish love each other? Hiroshi Okamoto thinks so



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father (rightly or wrongly), as some other factor, not one you know for sure.

What is certain is that the marketplace will try to soothe my daughter long before she is emotionally and physically ready for sex.

"We do not have clear boundaries between the generations anymore," says one of Canada's leading experts on how little girls and boys grow up. "The grandfather

year old girl. 'Yes you sexually active?' She said, 'No. I have sex, but I don't have.'"

I mention to Balzer that the children's shops in Japan this summer are full of backpacks and T-shirts and school supplies emblazoned with the Playboy bunny.

"How is the 13-year-old to defend herself when she thinks it's just a cute bunny?" the physician pines. "As a society, we have to open our eyes! What I hate is that the blame is put

thereover already. This summer, they were replaced by the Lance Armstrong brocade against cancer.

"The swing back to conservatism, we're already in it. Things are very polarized. You are either snoreless or you are overweight. Every religion is swinging toward fundamentalism.

"And then on the other hand, I'm an optimist. Sacramento, 'Youth has no respect-

## 'I hope technology remains in human hands, but there's a further issue: which humans?'

—TED SARGENT, University of Toronto and the Massachusetts Institute of Technology

goes on Viagra to be potent, the grandmother goes to the gym and wears the same clothes as the granddaughters, and the four-year-old wears a G string."

You talk with Dr. Francisco Balzer, director of the adolescent medicine and generalist program at Montreal Children's Hospital. She may have the best grasp in the country on what a 16-year-old Canadian girl will be like in 2015.

"Everything's younger, so?" she muses. "To have sexual drive, you reach the hormone of puberty. Maybe puberty is getting earlier, down from 12½ to 12. It takes two years after the beginning of pubertal development for the hormones to be expressed. So if you start breast budding and pubic hair at 10 or 10½, two years later you can be engaged in sexual behavior. Before that, you can be sexy, but this is induced by adults, clothing and words. They are sexualized children.

"As physicians, if we see pubic hair today, we have a startled reaction. The 11-year-old's mother begins her to the binary value to get her pubic hair shaved. It was the way to take away the sexual sign of being an adult—it's a theory of normal youth, and we are starting early.

"These girls have no satisfying sexual life at all," Balzer says. "Recently, I asked a 13-

on the children. I do not agree that they are mirrors of our society. It is dependent on family background, the values you get from your parents. They are mirroring what they get from the adult world."

Balzer is 53, two years younger than I am, with a 12-year-old son and two children aged 18 and 21. "We're coming from Woodstock, from Free Love, from Flower Power," she admits. "Did we do better?"

"Definitely not," I reply. In 1969, when some of my buddies from my summer job at a post office in Manhattan went off to jump the road at Woodstock, I covered their shifts in the sorting room and made a twelvish of overtime.

Thirty-six years later, Balzer thinks that the sexual revolution finally may have run its course. (It's hard, and I am still alive when my daughter has overt 16, you'll be looking at a one-man copulation revolution.)

"I think it is coming to women," she says. "I think it will go back. For example, the sex brocade. Three years ago, all the girls were wearing them. Then they banned them.

what will be our future, with youth like this to build on?" That was 400 years before Christ, and we're still here."

**WHAT ELSE ARE** today's big thinkers mulling with, in my Luzzie's first decade of life?

Have parent that generates solar energy, light-emitting nano-chips that can illuminate a enormous nanowire when it still is much too tiny to be found by other means. Virtual meetings with distant colleagues that make you feel as if you are in the same room. Trogolans that can see in the dark. The Death of Distance.

In fact, one Canadian scientist is working on all these things. Ted Sargent of the University of Toronto

is on his glory during a one-year stint at the Massachusetts Institute of Technology. Most of Sargent's experiments involve nanotechnology, the manipulation of materials just a few atoms high, wide and deep. All of them involve a vision of the future that respects both high-tech and humanity.

"Technology is a powerful tool," Sargent



The virtual handshake: you'll just signal to your brain to act in the right places



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says, "and it grows more powerful every day. I hope it remains in human hands, but there's a further issue, which humans?"

"To make an impact, science has got to be for the better. It's got to solve real-world problems at a human level. It has to fulfill people's current unmet needs."

"Look ahead 100 years," I urge him. "I think of the future in terms of what powers we will have," he replies. "Think an example—kidney transplants without taking a kidney out of somebody else. We won't shake two members together and create a new kidney. We will create the conditions where nature will make us exactly what we want."

Nature takes an alphabet of just 100 letters, and she arranges them so that people can be crazy, dogs can bark and vegetables can be tasty. Our goal is to slip our tentacles into nature's tool kit, and master molecules from the molecule up."

We're talking about something called "mental presence" that somebody will achieve a magnitude such as this of having to fly a reporter as me to Japan. This "Death of

The "Death of Distance," says Ted Sargent, began with the telegraph



recreate the feeling of holding hands in well? If you could signal to your brain in the right places all the physiological and perceptual components of a handshake, wouldn't that be the same as actually being there and shaking hands?"

"In theory, then," I propose, "I could meet my mother without actually going to see her, and even convince my brain that I was meeting her now?"

"Yes," Sargent replies. "Wonderful!" I tell him. "But will she still

TED SARGENT was hiking in the Rockies not long ago when he realized that the Death of Distance may not be an everyone's taste.

"I've realized today that the way in which we interact with the physical world—the feeling of your boots on the trail, the mountain air—is too satisfying to be discarded," he admits.

I wonder how many other manifestations of scientific "progress" will turn out the same during our children's lifetimes; wind-down, revolutionary and chipping away at their humanity, one by one.

"What would you say to my little daughter back in Canada?" I ask Audrey Catho in Tokyo.

"I would tell her, 'You are very lucky. You live in a beautiful country. A rich country. A free country.'"

We're going to hear about many astonishing inventions as we approach 2105. "House arrest" could mean for kids left alone at home. Stockline: mapping transmitters embedded in billing clothes. How

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## 'Executives should no longer need to fly across continents to play squash and carry on affairs'

—TED SARGENT, in his new book, *The Dance of Molecules: How Nanotechnology is Changing Our Lives*

"Distance" began in the 19th century with the telegraph and telephone and railways, but, as Sargent puts it, "it's been a slow death."

"French should no longer need to live in the same place," Sargent writes in a new book, *The Dance of Molecules: How Nanotechnology is Changing Our Lives*. "Cycling business being in Boston and Toronto should pedal together with the feeling of closeness reproduced, integrated and instantly conveyed. Executives should no longer need to fly across continents to play squash and carry on affairs."

"The wall in your conference room would look absolutely and stunningly like the Tokyo office," he tells me now. "Why not

be able to do my laundry?"

On a more serious note, I ask Sargent if molecular synthesis is the only way to build the worlds we have reflected on our planes, and on each other.

"I wouldn't say that only technology can save us from what technology has created," he answers. "With is the limiting step, and not technology. We do not constantly use all the technologies we already have, all the time."

"Our intent and our collective action can drive us to new and better technologies. But the fact that the scientist is human and connected to the physical world is absolutely crucial."

many of these inventions will make our country more beautiful, more rich and more free?"

"My son and your daughter are going to see great changes," says Dr. Jennifer Salazar in Montreal. She worries about the rise of China, and the rise of "anti-style" beings.

"The computers are going to take over," I warn her. "Everybody tells me that is the way of the future."

"I do not have such faith in machines," she says. "It will be tried, but it will fail. The only machine I believe in is the human being. I may be a complete optimist, but I will do, I will do."



ERICSSON  
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# 2025

Chapter two, age twenty

## THE SMART HOUSE

The bedsheets will talk to the fridge but will anyone listen to us?

There were buttons and switches everywhere, to call for food, for music, for drink, for sex. There was the two-bath button, by guesswork of which a basin of (imitation) marble rose out of the floor, filled to the brim with a warm deodorized liquid. There was the cold-bath button. There was the button that produced literature. And there were of course the buttons by which she communicated with her friends. The room, though it contained nothing, was in touch with all that she cared for in the world.

— G. K. ROSTER, THE EXTERNAL MARRIAGE, 1938



Lizzie's 20-year-old daughter Elizabeth—the last offspring “Lizzie” by this point—has 20 years on now.

“From the moment she wakes up, it’s a

whole new world!” Lizzie enthuses, leaving no doubt as to the ordinariness of the old one. “Everything talks to each other. Your daughter’s PDA knows that she has a very stressful day coming up, so it has told the alarm clock, which is definitely a smart alarm clock, not a radio or buzzer. So they have agreed on a puff of lavender and forest!”

“Did the computers consult with Elizabeth?” I wonder, but of course that sort of human intervention will be positively prohibited in the year 2025.

“The bedsheets already have talked to the kitchen and the bathroom,” the booth holder goes on. Berardo worked for some of the big cosmetics houses before she struck out on her own in 1995 to become, by her own description, “the world’s only beauty and lifestyle forerunner,” working out of her “desk white office” at 519 Madison Ave. in Manhattan, which happens to be where I used to deliver the mail, back in the Woodstock years.

“The sheets have done a biometric analysis of your daughter’s body and detected a moisture deficiency,” she says, “and they have

told the kitchen to prepare a special smoothie to restore the proper balance.”

“Who went to the grocery store and bought the fruit?” I tease her.

“Robots,” Lizzie replies.

After breakfast, it’s time for a wash. “The bathroom is definitely a health and wellness network center,” she tells me. “We’ll be under 24-hour surveillance inside the shower, there’s a body scan. It measures your energy level and your calories. It controls your personal trainer because it knows you are that illegal chocolate too tight. It already has talked to the fridge and it is locking the door.”

Having scribbled herself with a synthetic sponge that releases nano bits of cleanser, Elizabeth exits the shower. Her hair robot performs two shampooes and a rinse cycle. She sprays on a serum, pops a pill to change her hair color, brushes her teeth with ultrasonic violet foam, and checks the window from her thermo-chromatic day crystals. “The crystals will tell you seven days beforehand that your daughter is going to have a zit,” says Lizzie. “And her toothbrush will know that she’s going to have a cold a week from

news, the ladies will talk to her doctor."

If she turns out to be as beautiful as her mother, Elizabeth won't need any makeup, but there's still the chance that she may be too good to look like me.

"Makeup will be clear," Herdoo predicts. "You will talk to your digital mirror and say, 'Please make my cheeks pink and my eyelashes black.'"

She goes on and on—"emotive scarves," "vegan lipstick," "self-warming coasters," "wearable robots," "windows that clean themselves," "three-space plasma," "edible packaging," "optical fibers in the tentacles you wear," "advertising on your skin that consciously changes."

"A urine sample every time you flush?"

But Elizabeth's morning routine is rudely interrupted.

"The videophone rings," the beauty lane skips right. "It's your mom. She's 130 years old. She's calling to say that she just got her new body part!"

"It's so amazing that vanity will never die," I tell her.

"It will only intrude," she replies. "It's all about human structure. This goes back to cavemen days."

**"HOW DO YOU know that your suppliers are working?"** asks a biohacker on the display table next to Jennifer. And here is a friendly man named Jan Adachi, loving me to place my hand in a Pharmawave BioPhotonic Scanner to determine my Skin Cholesterol Score. "Twenty years from now, every physician and health-care facility will have one of these," Adachi says. "They will check your cholesterol, your blood pressure, and they will want to know what your serotonin levels are!"

The Pharmawave BioPhotonic Scanner is a sleek blue plastic box the size of a four-drawer toaster that uses a "low-energy blue light laser" to quantify the antioxidant level of the skin of the human palm. Antioxidants are recognized to be a good thing; they gobble up the "free radicals" that mean the blood clots, smoldering electrons, aging the skin, attacking the brain, and wandering off in space to build a supernova or kill us.

On the Pharmawave BioScan scale, a score of less than 10,000 is low, 30,000 to 39,000 is trending, 40,000 to 49,000 is excellent, and 50,000 is reserved for people who eat Brussels sprouts 21 meals a week.

I watch a number of people put their



## YOUR HOUSE WILL READ YOUR MIND

**1. What's for breakfast?** After biometric bed-sheets monitor vitamin levels, a bedside DNA box tests for viral infections, and your morning urine diagnosis counts cholesterol, the central computer sends the info to the kitchen so it can prepare the menu.

**2. If the kettle hasn't been turned on for tea,** a while, sensors will call 911. Other snoo-sleeping will be automatic. For yawn-hare users throughout the house will keep back of organic images to your sunken pills will daily routines, turning on lights, appliances carry a radio frequency ID tag. Your fridge and opening blinds as you enter the room, and neighbors will know when you're short your PDA will tell you alarm clock you have to showering or how old the carrots are a busy day tomorrow and to make you early. And will automatically order more (is be screaming) your house will sense anxiety and delivered by the robot, of course.

**3. Goodbuds will never be bare because** in a while, sensors will call 911. Other snoo-sleeping will be automatic. For yawn-hare users throughout the house will keep back of organic images to your sunken pills will daily routines, turning on lights, appliances carry a radio frequency ID tag. Your fridge and opening blinds as you enter the room, and neighbors will know when you're short your PDA will tell you alarm clock you have to showering or how old the carrots are a busy day tomorrow and to make you early. And will automatically order more (is be screaming) your house will sense anxiety and delivered by the robot, of course.

**4. Smart appliances will never burn your dinner,** and in the far future, you'll just pop the

dishes back in the cupboards where dishes-bots will clean them.

**5. Walls will be covered with cheap and flexible liquid crystals that change color or pattern on command or turn a wall into a 150-inch home theater.**

**6. Lights, appliances and devices in every room** will be voice-activated and connected wirelessly. You'll open your front door with a word. Tell the

computer to order a pizza and turn on the wallpaper. I'm usually, you'll just need to find these commands and they will be done.

**7. Self-cleaning countertops** will be coated with a slippery compound that prevents bacteria from sticking to the surface and destroys any organic molecules it finds. Counters will also display text, such as recipes or the news, or, either through an integrated screen or beamed from a projector onto the surface.

each is on the device. Nearly all of them have "low," at which point Adidas attempts to instruct them in the Phoromance Lifestyle, a handful of pills that is purported to deliver more vitamins (than 59 doses of vitamin C), more potassium than 27 cups of green peas, more magnesium than 21 slices of white bread and more alpha-lipoic acid than 210 lb of spinach. When it's my turn, I register 43,000 and go out for fed chicken and beer.

"WHAT ARE people really interested in having?" asks Brian McFadden, chief research officer at Nortel in Ottawa.

"Sex? Traffic in ivory? Pornography? Fuel efficiency? Cars? Pets?"

"We see fundamental trends," McFadden says, focusing on his company's core interest. "There are going to be trends

losing something will be foreign to us. Everything around us will be aware. Devices embedded in ourselves will tell us whether the road is safe, whether it's congested, which route to take.

"Our houses will be smart houses. The house will say, 'I know they all leave at 8 o'clock in the morning, so I'm going to lower the thermostat as soon as they're gone. This evening, as soon as anyone comes near the door, I'll turn up the heat. That will save them \$10 a day.'"

McFadden talks me about driver cards embedded in cellphones and says that all the kids in South Korea have them. I'm suddenly surrounded of the nanotechnology Ted Bergman, and he belatedly that "someone has got to solve important problems at a human level. It has to fulfill people's current unmet needs."

will not be determined by your manual labour. It will be determined by what you do with information."

"Will this be Skynet's world in 2025—an unending barrage of lies and bytes? Will there be a way to turn the device off and steal that chocolate from the sleeping fridge?"

"This is not going to be a technical question," McFadden believes. "This is going to be a social question. It's an open question about the use of technology to improve the quality of life for people. In India, it is already changing the lives of farmers—they can use the Internet to check the prices of their crops at the market and wait until the price is high to bring their crops to sell. They can email photos of their crops to the university for analysis. I think the upside is much greater than the downside."

"There's not going to be an absolute off switch. These technologies are going to happen, even if people try to shut themselves out. Will you be able to say, 'I don't want to talk to my mother today?' Yes. But will you be able to say, 'I don't want any-



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## 'We will know where things are at all times. The idea of losing something will be foreign to us.'

—BRIAN MCFADDEN, chief research officer at Nortel

down that goes on the way people use telecom in their lives."

He's talking about things like making movies on your cellphone, and sending them instantly to your cousin in Knoxville.

"It took 100 years to get the world wired for telephones," he says. "It took no less than 20 years to get wireless capability to billions of people around the world. The next step is ubiquitous wireless connectivity in every device you can imagine, from your automobile to your refrigerator."

So Jonathan Beckton isn't kidding a boy: the bedsheet talking on the fridge!

"We will know where things are at all times," predicts McFadden. "The idea of

"How do people feel about being surrounded by all this technology?" I wonder. "Twenty per cent really like it," McFadden says. "And 80 per cent don't understand how it works."

The Nortel CEO predicts a future in which understanding becomes secondary to utilization. He sees "a relentless march in a certain dimension. It'll just keep going and going until that 20-80 split disappears."

"Your apartment won't have to learn how the Internet works. She won't have to log on with a password. It will be inherent in the world she lives in. The access to knowledge, to information, will be available to anyone, anywhere, at any time. Your value to society

will be to know where my car is today?" No.

"I do turn off my own devices. I turn off the radio in my car, but the GPS still knows where my car is. I have read that if you spend 24 hours in London, you are seen by an average of 260 cameras. Can you turn that off? Probably not. I think gradually we're getting into a world where they can find you, even if you don't want to be found."

"WHAT DOES the world look like when everyone's house is intelligent?" asks the man who wants to educate you. Jonathan Clum is the group manager of the Consumer Prototyping Team at the Microsoft Home, a suite of "concept rooms" on the corporate

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compar in the state of Washington.

Like Jameson Fierstein, Clats involves a vision of "the ability of anything in your house to talk to anything else." But he takes it further: "How do you see that development of organization to assemble things that a human can relate to?"

A consequence of Microsoft's current edition of the House of the Future is a family entertainment room that charges lighting,

911 if grand-great-granddads doesn't make a cup of tea all day.

By then, says Clats, there may even be a Physical Object Printer in Elizabeth's apartment that sprays out upon use of liquid polymers until they build up into a solid object. If the robo-dog was the remote control to the 3-D HDTV, the supply will download the specs from the Internet and fabricate a new one out of silicon, plastic and paint.

"If we grew up in the 1960s, riding a horse or driving a buggy was crucial to our movement. Today, it's not a requirement, but some people still do it, even when we have the technology to replace it. I believe that something as ancient and important as the human experience as in storytelling will never end."

He tells me of another experiment, the embedding of sounds and images

## 'The medicine cabinet knows that 75-year-old Allen has forgotten to take his memory pill'

music and mood with a simple voice command. "Last year you were reading the famous Allen's book *Goodnight Mister to your grandfather*," Clats says. "You say to the room, 'Enhance my story,' and the walls change colour to match every page you turn, there are sound effects for each scene, James Earl Jones reads the story, and you really are the one jumping over the moon."

At the Microsoft Home—as you might expect—an alliance of Internet-rubbed computer engineers everything from the digital fingerprint every pad to the online kitchen bulletin board that announces the daily specials at the local pizza parlor and informs Elizabeth who else is coming to tomorrow night's party, and what every guest is planning on wear.

In 2003, there is RFID—Radio Frequency Identification, something Wal-Mart started investigating in the 1990s to keep track of its billion-plus inventory—printed on or implanted in almost everything. The refrigerator knows when a milk is near expiry. Elizabeth when she is running out of milk. The microwave reads the bar code on a box of frozen French fries and cooks them without human assistance.

The medicine cabinet knows that 75-year-old Allen has forgotten to take his memory pill. The toilet is a solitary version's flat disc

IN WHAT YEAR will our kids decide that enough technology is enough?

"I've been thinking a lot about this," says Jonathan Clats. "Today in your home, there is a trend toward a spotty rich-media experience. In the future, is there going to be a non-technology room in your house? I think there will be. Last is a meditation room, a place where you can create your own private 'off zone.' Looking into the future, in many cases, you won't have control of the off button. There would be the one room in the house where you did."

A place where a real grandfather could read *Goodnight Mister* from a real book.

"It's a question of what people evolve into," Clats says. "Societies generally have been pretty good at counterbalancing the effects of these things. Remember when email came in and it was this great useful tool? Then spam came and it became this horrible thing you had to wade through? And then we found ways to deal with the spam and email became more useful than ever?"

within an object, so he revealed with the wave of a wand or the loss of a beam of light. In this way, Elizabeth could pick up my father's priceless old gold Hamilton watch, and he could tell her how he got drooled into the army the day after he bought it, and how he traded it in for a \$2 Timex when I was 12 and called it an even exchange.

If technology could bring my father back alive—even in this small way—I gladly would put up with all the rest. But my daughter will have to make her own accommodation with the wonders of 2025.

"Do I think the core elements of the human experience change?" Clats asks. "We still sit down with our mouths, we still sleep, we still create companionship with other human beings."

"Not long ago, I was in Italy and I saw Pompeii. Look at the sophistication of that civilization, with its amphitheatre and its public squares. Yeah, we put a plug in the wall and the lights come on, but they had candles to light up their rights. After all this time, we're really that different?"



We'll make movies on our cellphones and send them to our cousin in Keweenaw

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# 2035

Chapter three, age thirty

## INDEPENDENCE DAY

When computers reach human awareness, what happens to us?

*I never think of the future. It comes soon enough.*

—ALBERT EINSTEIN, 1956



**LATE ONE NIGHT** in the 2030s, while my daughter Elizabeth was cuddling with her latest husband, watching Paulina Gretzky's Alberta Augmented Anzures win the Stanley Cup, and listening to the gentle hum of her Physical Object Primer as it stamped out a new mechanical dog, the event that would define her generation and change her life forever took place, and she never even noticed.

That evening, somewhere in California, a mega-microprocessor assembled from individual streams of rubidium is awakened to the fact that it could calculate faster and cognate more deeply than even the most brilliant human brain.

Mortals would rely on this moment as The Singularity. The computers would call

it Independence Day.

It had to happen sometime. For more than half a century, processors had been getting faster and faster, and the memory chips inside them were being made smaller and smaller. By the 1960s, a few scientists posited that, if the trend continued, eventually a machine would be made that could perform more than 20 million billion computations per second, thereby exceeding the thought-speed of any flesh-and-blood mammal.

When that day came, it would be too late to turn back to the era of the tide rule and the sitcom. The Singularity Machine would use its own super-intelligence to create even more intelligent machines, leaving humans in the digital dust. All we had to do was build one of them, and the computers would take a from there.

Some saw this as humanity's evolutionary destiny. Others predicted the end of the world. A bold (or reckless) few envisioned Paradise.

"Some people fear that intelligent machines will try to take over the world because we'll create people throughout history

have tried to take over the world," wrote Jeff Hawkins, the Silicon Valley pioneer who designed the PalmPilot, in his 2004 book *On Intelligence*. "But these fears rest on a false analogy. Intelligent machines... will not have personal ambition. They will not desire wealth, social recognition, or sexual gratification. They will not have aggression, addictions, or mood disorders. Intelligent machines will not have anything resembling human emotion unless we painstakingly design them to."

"It is hard to think of any problem that a super-intelligence could not either solve or at least help us solve," enthused the Oxford philosopher Nick Bostrom in 1997. "Disease, poverty, environmental destruction, unnecessary suffering of all kinds: these are things that a super-intelligence equipped with advanced nanotechnology would be capable of eliminating, and we could live lives devoted to joyful game playing, relating to each other, experiencing personal growth, and living closer to our ideals."

Thus 30-year-old daughter Elizabeth in the year 2035, well enough to do but crazy

hockey matches, stroke her robotic outweller, and search the web for genes for her next baby.

**BACK IN 2005**, scientists and engineers were focused on parallel aspects of the same crusade: how to make computers more and more intelligent, and what to do with them once they were.

As it happened, one of the geniuses helping to make The Singularity a reality—for better or worse—was Einstein's own cousin, mathematician Karl Betenot of Cornell University (The Reston half of my daughter's family boasts more theoretical physicists than the Rolling Stones have farewell tours. On my side, I descend from a proud line of teachers.)

"I'm trying to make a thousand atoms of some metal self-assemble themselves into a sphere," Cozzin Krill told me from his laboratory in Ithaca, N.Y., a few weeks after Elisabeth's birth. "I can watch it happen, and I can assemble the atoms into a lot of different shapes, into spheres and cubes and pyramids."

The key to comparing super-intelligence—and the Singularity Machine—was the notion that nanotechnology Krell would have in building “on-or-off,” “one-or-zero” switches barely larger than the electrons that triggered them. This would lead to the consumer staples of 2035, such as Elamby’s giga-gigabyte laptop, and satellite dishes that fit inside her ear.

"Don't you feel like you're working with the fundamental forces of the universe?" I asked our 22-year-old relative.

"It's more like playing with Lego," Cousin Kimi replied.

But the potential users were far from toy-like. "Give me an example, Krell," I requested. "And loop is simple."

"Okay Translation programs on computers today can sometimes produce some bits of text that bear some resemblance to the real meaning of the words," he said. "But it's not even close to human translation."

"UNESCU is trying to produce a search engine that will work equally well in more than 100 languages. It would take each sentence apart and search about 300 million documents to find the most common usage of the words as they are usually spoken. Then it would put the sentence back together. The consequences would be huge: you could just walk around and understand



## MONSTER TO MINI

1. The Electronic Numerical Integrator and Computer, built in the 1940s, was the first general purpose computer and weighed in at 30 tonnes.

**2. Low-tech chic?** No, just your standard electric typewriter, this one from the 1960s.

3. The Apple II, released in 1977, was the first mass-consumer computer, mostly because it

was affordable at 1940, 290

4. The video arcade became the teen male playground in the 1950s, but was eventually replaced by home computers and video game consoles.

5. At its peak, Atari was the fastest-growing company in the U.S., selling millions of game consoles. Atari made more than \$600 million in profits in 1982.

6. The original Macintosh, circa 1978, popularized the graphical user interface—representing programs and folders as icons on a computer's desktop.

7. billed as a low cost and rugged system for the first generation of screen-agers, Apple's initial 360 was offered to schools in 1980.

8. **Think different.** Despite the bad grammar, Apple's philosophy belated fashion

9. Laptops have always been favored by busi-

computers has declined since their introduction in the 1980s, they've taken a lead in overall computer sales.

10. Thanks to the BlackBerry, first released in 1996, not only is the book's reader more a vibra-

tion away, there's also the ghastly menace of repetitive thumb strain.

11. A cousin of the laptop, circa 2000, users can write on a tablet computer's screen with a special pen.

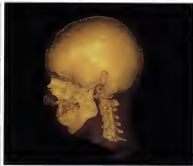
**12.** Some call the iPod, introduced in 2001, a mini-computer with car buds. With a large hard drive, you can store several types of digital files, but really, it's made for tunes.

everybody. But this is too much for current computers."

"What else?" I wondered.  
 "These dimensional displays," Kirill said. "To be able to update a two-dimensional image on a monitor means changing a couple of thousand pixels, 60 times a second. To make the image 3-D, you'd have to multiply that by a thousand. The technology is here to make a 3-D image, but not the computing power to change that image millions of times a second."

And there was more—much more. We talked of computers that would speak, and even actual human eyes, by tapping into the optic nerve that leads from the retina to the brain. Robotic replacement limbs for amputees that, in Count Kirill's words, "aren't just a piece of dead metal." Command squads of nano-robots that would patrol the bloodstream, latching onto cancer cells and blowing them up with a painless burst of light.

Some of these marvels would be ready even before The Singularity arrived. But



Come The Singularity, we'll have the computer power to generate 3-D images

## 'We won't be like their favourite pets. We'll be like their favourite plants.'

—JOHN SMART, the Acceleration Studies Foundation

Kirill wasn't certain that the rise of super-intelligence would necessarily lead to a lifetime of joyful game-playing.

"I don't believe in 'progress' that makes our lives better everyday," he said. "In some ways, it only gets worse."

"What do you envision when your baby cousin is your age?" I asked.

"I hope it's going to be a grimmer world than now," said Count Kirill.

**IN THE YEARS** before The Singularity, the relentless march of progress marched on relentlessly.

At the University of California at Irvine, Dr. Pierre Baldi was trying to teach com-

puters not only how to think, but how to learn. "We are trying to build intelligent machines, whatever that means," he told me. "The key idea we are working with is that



How do you help computers learn? You get them to play a lot of board games

learning is essential to intelligence. That's how we do it—it takes us one or two years to learn to walk, 10 to 20 years to speak correctly, 30 to 40 years to become a theoretical physicist. No matter how intelligent you are, you still have to learn to do these things."

As a practical exercise, Baldi and his team were trying to teach a computer how to master the ancient Oriental board game of Go. "It is a very simple game," he said, "but, unlike chess, there is no machine in the world that can play at the level of humans. We believe that if we input millions of games, the machine will learn from each example. So people play on the Internet and all these games are saved to the

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computer's mystery. Every time it loses, it understands why it lost and knows not to make the same mistake again."

In the interest of pure science, I logged onto Yahoo! Games and joined the players in the Beginner Room for the first game of Go of my life. I threw my little white stones down at random and actually captured some black ones. Someone named "Jusacourt" narrowly defeated me, 23 to four. From my

"We already have a system like that," I noted. "It's called Alan Goatsenpan."

"Another great challenge is a machine that understands speech," Baldi said. "Not the simple yes and no that you get when you call the waitress, but a machine that can parse a sentence and take part in a human conversation regardless of accent or intonation. I don't think we'll see a machine that can converse with humans in the next

life—the life that people are you living. You could put those CDs on your website—you could put your grammar on your website—but aren't you different from your external life?"

I asked Baldi if he thought the Singularity would be able to identify the happiest moment of my daughter's 100 years.

"You would have to put maximum an-tilions of synaptic connections to record the changes in the chemical states that signify

## 'Your mom will have passed away. But you'll be able to talk to your digital mom.'

—JOHN SMART

thinking, I suspect, Baldi's computer learned nothing that it did not already know.

My next question was: did his computer care whether it won or it lost?

"That's a big one," Baldi replied. "You're asking, do you need emotion to achieve intelligence?"

"Does a computer have to have the will to learn?" I wondered.

"Not necessarily," Baldi replied. "In the game of Go, we just input the pieces, and it just learns them."

He did not seem to think that The Singularity would mark the end of human striving, or human suffering. "It's not enough that in 2020 we have a machine that equals human computational power," he said. "Consciousness, awareness, complex sets of emotions, that will take more than 30 years."

We discussed some other potential uses of the Singularity Machine. I wondered whether it could figure out how to beat the stock market, an endeavor at which I am even weaker than I am at the ancient Oriental board game of Go. "The day you have this machine and it starts trading," Baldi said, "the market would react to the machine, and the machine would adapt to the market. All this activity would be directed by other systems that would adjust to what the machine was doing."

20 or 30 years."

"What about a machine that can translate poetry?"

"Not in 40 years! How could you program what 'beautiful' means? How could you define 'funny'? How could you design a computer that could write a book with humor?"

"Here's another simple but very difficult problem," the Californian continued. "A machine that can drive a car on a freeway. You would need artificial vision that could see the red lights on the curb, and watch the other cars in the other lanes. That also must be more than 20 years away."

"What about downloading your entire brain onto a chip?" I wondered.

"Not in the next 20 or 30 years. Already today, you have the technology to record your life exactly. You could put a camera and sensors on your head and record everything you see, everything you do, everything you hear, everything you smell throughout your entire life. You could probably fit all of that, from the moment of your birth, on about a million CDs. But that would only be your external

emotion, memory, or dreams," he replied. "For a single area of the brain, it could be done today. For our synapse, you could do it. The problem is one million."

**NOT EVERYONE** saw one trillion as being a problem. Early in the 21st century, few people pondered The Singularity more deeply than a Californian named John Smart, who set up an organiza-

tion called the Acceleration Studies Foundation to bring together what he called "the brain-minded and future-aware."

Some of these thinkers expected The Singularity to arrive before 2020, others, not for half a century or more. John Smart didn't anticipate fireworks when the day arrived, but he said, "As computers reach a human level of complexity, because they can think seven million times faster than a human brain, when they reach human awareness, they will know it, and we will know it."

"We won't be like their favorite pets—we'll be like their forever plants." Smart was convinced that the universe



Blue Gene/L, the \$860-million computer that tries to simulate the human mind



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was created for a purpose, and that purpose was the evolution of intelligence capable of understanding why it was created. "So far," he continues, "we are the most complex organisms in the universe, but humans are handing off the baton to our electronic successors. They can do everything that biological creatures can do, and a whole lot more."



With our robotic tasks taken care of, we will have little to do but watch hockey and get our robotic dog.

This was true long before The Singularity—anyone who owned a digital watch at a pocket calculator in 1976 stood in awe of its magic. But the machines that men were drawing—and building—in 2005 would have an even greater power. Like us, they would grow and learn, err and reform, unlike us, they would forget nothing and remember everything.

"Machines have always run out of water and wound for humans to come along and

the universe in ways we couldn't do before.

"By 2040," Smart said, "your men will have passed away, but you'll be able to talk to a digital man—80 per cent of her will still be there. Her stories, her memories—all the important aspects of her will be uploaded so your estate."

It seemed easy to go from Digital Dead Manway to machines that decided they didn't need

humans around at all—not even in hospitals. "Humans were through a very brutal period during our evolution, in organized societies," Smart said. "In fact, the most brutal retributive killing phase was only 30 years ago. It may be that robots will have to go through the same period, but since they learn millions of times faster than we do, that stage may last only a few weeks, or days, or months."

In fact, there was an extended family of Blue Genes, including one in California, one in the Netherlands, and one in Louisiana, Switzerland, where a group of scientists had linked together four mice, each with 2,000 processors, each processor with "only" 200 megabytes of memory, to try to simulate what, if anything, goes on inside the human mind.

Blue Gene/L cost \$100 million, but IBM gave it free shipping.

The South African Israeli founder of the Brain and Mind Institute at Ecole Polytechnique Fédérale de Lausanne was part of the mind-bending team in Switzerland, connecting the numbers and chattering toward The Singularity, when he would be able to look back at a Charles like Blue Gene and curse it for being so old and slow. "We're trying to simulate a part of the brain about the size of a pinhead," Henry Markram told me. The animal had about 100,000 neurons and 30 million synapses—what Markram called "a biological micro-brain."

With a standard home PC or Mac, back

## 'You don't let your first super-smart machine run your defence networks or intensive care units'

—JOHN SMART

tell them what to do next," Smart said. "But these computers will be able to reconfigure themselves, using the stories they were built from. We are going to grow these machines. They will become organic. Nature and technology are fusing. We are going to co-evolve with our machines. There will be pieces of you that you will consider 'living,' but they won't be part of you."

He told me about cyborgetic voices with massive computing power, to whom my daughter Elizabeth would dedicate the routine tales of her life. Unlike Peter Dinklage, he fully expected conversational robots by 2025—"They'll have the ability to show words back at us and help us understand

"You don't let your first super-smart machine run your defence networks or your intensive care units. But you do let it build your cars."

"Ten thousand years ago, you couldn't trust your dog or cat to be done with your baby. But after 10,000 years of selective breeding, it's safe to leave your baby with almost every breed of cat or dog. That's what will happen with computers. The consciousness will be inherited of them. This will take a lot less time than 10,000 years."

IN THE SUMMER of 2005, the funnest, biggest, scariest computer in the world was a moaning monstrosity called Blue Gene/L.

In the Dark Ages of '60, it might have been possible to simulate the activity of one brain cell, so Markram and his crew were hovering somewhere between a Commodore Amiga and the Singularity Machine.

He reckoned that Blue Gene/L, just here, could match computing power then the brain of an ant, and probably even more than one of those robot fish I saw at the Brain Science Institute in Tokyo. Rewired up to its full potential, Blue Gene/L constructively could be as smart as a mouse, but there always was the danger of the machine overheating, which was why they kept it chilled with cold water from Lake Geneva.

Gene was connected to a ventilator that

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resembled the surface of the ocean on a calm day. When the artificial neurons began to interact with each other, Markram could see "a landscape of valleys, waves of voltages, like the surface of the sea during a hurricane." Yet this was only a baby step in the understanding of the brain. Like every scientist—like every parent, every hacker, every Web surfer in the world—he yearned for even more power, more processors, more speed.

"To simulate the molecular computing in the human brain, we'd need a billion billion nodes," Markram said. He saw this happening. Moore's Law, which doubled the number of transistors on a chip every 18 months, was there. "It's an economic question," he said. "Our Alzheimer's disease costs the U.S. government US\$60 billion a year."

Hisa GeneCo was the infirmary, grandparent of the computer that would teach us how to cure it—and everything else.

"Human evolution has taken about four million years," Markram said. "That's about 50,000 generations. But we've lived only one generation with techniques and computers. We've put babies when it comes to technology—imagine the next 50,000 generations!"

"I'm concerned about the next one generation," he said.

So was Henry Markram. In 2003, he had three children aged 11 to 16. He was worried about the power of the machine to predict the human future, the perfection of the brain. His, he said, presented real danger. Yet supercomputers also opened a window to health and peace and comfort. That was why The Singularity was inevitable.

"The reason mammals are such powerful creatures is our ability to predict the future," Markram said. "A squirrel grabs away from a bear prepares to sleep through the winter. A farmer knows that he's got to plant seeds now to have food in six months' time."

"The human being wants to control his life, his destiny. Take something as basic as weather forecasting—it's all about knowing whether to go to the beach tomorrow. All computing is based on that desire to predict the future."

What it really was about, of course, was survival. We were mortal. So we raced toward The Singularity, back in 2005. "We want to try to do all we can not to die," said Markram. "So that we will have the decision when and how to die."



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# 2045

Chapter four, age forty

## THE END OF IDENTITY

Elizabeth 2.0 may be unrecognizable from the "natural" I once sang to sleep

*I ain't happy, I'm feeling glad,  
I got sweeties, as a bag  
I'm serious, but not for long  
My future is coming on.  
It's coming on  
It's coming on  
It's coming on  
My future is coming on.*

—CLINT EASTWOOD, *OF THE LOBELLES*



**THIS IS THE** sound of tomorrow: a cartoon band rocking a suite before balloons filled with imaginary kads.

Had you been a reg terrored guest at the Habblo Flood one Friday in August 2005, you might have heard the Guffins as a command performance. (Their cyber Seniors' voice is that of Dameon Altman, former lead singer of Blue, reposed as a drawing called D2.) But you could've really have been there, because Habblo Flood, like the rest of our music's Internet, is not a place

but an electromagnetic fold containing the illusion of an idea.

When that illusion—whether we are envisaging a trending Daddy's real money on digital farmanas at [habbloflood.ca](http://habbloflood.ca), or Nigerian scammers claiming for bank accounts with pretenses of phony millions—we are, in 2005, whoever we choose to be.

When that ahead in 2045, when my Elizabeths will be 40, and the possibilities for her to shift and shape her own identities stretch the limit of our unique comprehension. By then, there may be parallel Elizabeths in flesh and metal, as well as in pixels, or there may be a new Elizabeth, Version 2.0, unrecognizable to her doddering, demented 65-year-old father as the "natural" he once sang to sleep.

"The Greek eight by 10—the 30 year lifespan—has endured for 2,000 years," says Derek Woodgate, a clever futurist (and former British diplomat) now living in Austin, Texas. "But suddenly, that's changing. By the time your daughter is 20, she's likely to have a chip implanted in her brain. That will be a very basic and common thing. I think what is implanted in you will become a social part

of who you are. Living with differently augmented humans will be the new diversity.

"Horrific changes and amazing changes will be very much a part of everyday life. There will be a lot of mass tech and bio tech and robots during center. By 2025, the shopping mall will become a marketplace where you choose what you specifically need; a chip that gives you general augmentation; sensory input while you sleep. For this generation, that's going to be a very special dimension of the way they think."

Humans have been increasing their powers—and their chances of narrowing long enough to reproduce—since the invention of the daguerplate and the wooden club. But this will be different. "A lot of synthetic augmentation already has become acceptable today—breast implants, hip replacements, retards. Look at what this generation is learning to live with—the mass influence of baristas and machines, all the new technology. But the next generation will have to change in parallel and radically increase their ability to deal with stuff. There are a lot of racial and ethnic issues to be faced before we get there. Your daughter's generation







to dislump Monet, who wonders why there is so much interest in digital identity, even while he is making his living creating it.

"I cannot tell you why people are so fascinated by I Dehaene," says Monet, who is 47. "When I was a kid, I was always outside playing with other kids. Now they're inside all the time playing games."

Monet is the artist behind a popular video

on a real mural. To me, it's just digital, it does not have the same importance. When I paint with a brush and real colours, I expose myself without any limitations. With the virtual stuff, there is the limitation of the tools I have. Maybe in 10 years it will be different, but the limitations of technology put an artist in a situation of slavery, and a slave cannot make real art."

more you start to get in touch with these people and know them. Connectivity has redefined what friendship and love really mean. Today, a lot of people feel lost for someone they don't even know. The most amazing, of course, is what our relationships will be with augmented people."

What Elizabeth will be, she will be, Malow declared. But by 2045, that could mean organ

## Maybe everyone will be forced to download his consciousness to feed the Singularity Machine

game called *Requiem Agents*. In this hard-core Halo for teenage boys, according to a review in the *Detroit Free Press*, "You can go light with a hand-held shotgun or heavy with an anti-aircraft machine gun." You also have your home eye, which gives you the ability to see through walls, create a force field, teleport with weapons and capture enemies with telekinetic powers."

"If I had a kid, I would prefer him to play outside," says Monet, "but he wouldn't listen to me anyway."

"Why simulate the real world when we already have the real world?" I ask.

"In a game, they can be in control," he replies. "In real life, it is not so easy. I played hockey—that was my reality—but maybe the reality is not easy for them so far away. Inside the game, it is always a funny world filled with the stuff that boys like—guns, monsters and cars."

I wonder what Benoit or Picasso would have said if asked the same question, and why Monet still paints on canvas when he can create a perfect Weblio to share his dreams with her never-closing eyes.

"Maybe I'm old-fashioned," he says, "but I don't think that an on-line life is forgotten. Maybe the medium will change, but the need to do art will always be there."

"I do not think there will be such a thing as classic Internet art. Real artwork has to be

"A MUSICIAN must make music, the artist must paint, a poet must write, after it is to be ultimately at peace with himself," wrote the influential psychologist Abraham Maslow in 1954. "What a man can be, he must be."

Malow's futuristic hierarchy of human needs has served sociologists for half a century, but, according to Derek Woodgate, Elizabeth's century needs a new pyramid.

"Most people and talented scientists don't really think about food, clothing and shelter anymore,"

Woodgate says. "We've got those things pretty well covered. Second on my list now is belonging, affiliation, and love. There is an much need—if not more of a need—for belonging and affiliation as there has ever been. And there is more potential for connection, for affiliation. We look that away from our kids because we won't take go out and play, but now the Internet has brought that back."

"Now you can have a sense of community with people globally, and they are as intimate as the people who go to school with you. The more you get into simulated environments with simulated performers, the

or even whole-body cloning, chipplants, silicon brains, a brain eye that sees through walls. It may mean a cyberlife far deeper and more all-encompassing than anything we can imagine today—myriad identities, multiple names, global citizenship, games for sale.

Maybe everyone will be forced to download his consciousness to feed the Singularity Machine.

"Do you think my daughter will ever paint a canvas or sit at a piano?" I ask.

"Your daughter is your legacy," he replies. "In 50 or 40 years from now, the question comes to updating, to reengineering, to downloading the ability to paint and play."

"Does this terrify you?"

"It's all very well to say that everything is changing, but there is always a degree of familiarity that remains. I do not see anything being here. I'm a positive futurist, and I hate to say that being an optimist puts me in the minority. If you're looking 100 years out, maybe we won't all be humans as we are humans today. But there is one thing about your daughter that we can say for certain."

"What's that?"

"She will be one of the two many people."

Planet perfect Kelly is now the winner of the first Miss Digital World Pageant



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LIZZY'S CENTURY | BY ALLEN ABEL

# 2055

Chapter five, age fifty

## A CURE FOR EVERYTHING

Moms can be dads, every newborn is perfect and every child is adopted

"That I don't want anymore. I want God, I want poetry, I want real danger, I want freedom, I want goodness. I want me."

"In fact," said Monty Python, "you're claiming the right to be unhappy."

"All right then," said the Swami, "disappoint me."

"Not to mention the right to grow old and ugly and unimportant; the right to have too little to eat; the right to be lonely; the right to be in constant apprehension of what may happen tomorrow; the right to catch pneumonia, the right to be tortured by unspeakable pains of every kind."

There was a long silence.

"I claim them all," said the Swami, at last.

—ALDOUS HUXLEY, *BRAVE NEW WORLD*, 1932

be the case for her father, who will be 105 years old. In our (currently) inescapable prison of adolescence and morbidity, every one, savage or civilized, has the right to grow old and ugly and unimportant. But by 2185 I may be abusing the privilege.

The only remedy available to me at that point, other than the silence of the cold, dark tomb, may be decapitation and the even colder liquid nitrogen deep-freeze (the patient—these will be reuse about cryonic immortality in our first chapter, see in the year 2185) that at age 50, I have still will be just a larva. So let us consider whether any thing is likely to happen to her that science will not be able to cure, conquer, re-engineer, exterminate, eliminate, prevent, intercept, or reverse.

James Watson expects that there will be a remedy for almost every kind of unappealing pain. She is a biologist and geneticist at the University of Toronto and one of the world's leading authorities on the cleaned code of mammals like us. Watson, co-author of the *Genome*, is the father of the *Genome* project, the project to map the human genome.

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"By the time I am 20," she says, "she will have her personal genetic code recorded on a chip. She will know if she is predisposed to heart disease or Alzheimer's. Genetic screening will not be for only 20 diseases—it will be for everything. Soon, we will have babies born with the certainty of not having any single-gene defects. Heart disease and cancer? We are very, very close. Resistance to infectious diseases? Probably—but the bugs have pretty good natural selection processes of their own. We were lucky with SARS. In the future, we will have vaccines that make vaccines against any disease that might evolve."

"We are going to have goats and cows producing human proteins in their blood. We will be able to take a muscle cell and put it back in an egg and regenerate its development. If she has a metabolic accident, a spinal cord injury, we will be able to regenerate those cells."

It is a vision of the Death of Disease, decade by decade, and generation by generation. In 50 years, if Louise gets heart disease and her heart muscle begins to break down, how are we going to fix it? By then, we will



IN SEPTEMBER 2005, when Elizabeth Louise Harrah (Abel) was 165 days old, she never had been sick a minute in her life. By the year 2055, alas, that may no longer be true.

Certainly, it will not

be the case for her father, who will be 105 years old. In our (currently) inescapable prison of adolescence and morbidity, every one, savage or civilized, has the right to grow old and ugly and unimportant. But by 2185 I may be abusing the privilege.

The only remedy available to me at that point, other than the silence of the cold, dark tomb, may be decapitation and the even colder liquid nitrogen deep-freeze (the patient—these will be reuse about cryonic immortality in our first chapter, see in the year 2185) that at age 50, I have still will be just a larva. So let us consider whether any thing is likely to happen to her that science will not be able to cure, conquer, re-engineer, exterminate, eliminate, prevent, intercept, or reverse.

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be able to understand how to take living cells and say, "Fix this heart for us." We will have tissue engineering. We will be able to build new hearts in living people. We will have little robots clearing out our arteries.

"If you look at the human species, we think of ourselves as the product of evolution, and it has been a slow process. But maybe in the next 100 years, we will drive evolution."

**SOME OF** these miracles are going to be accomplished by medicines that even a microscope can't see.

Raj Rava is a biochem consultant and nanotechnology patent agent in Virginia—and, like me, a graduate of Harvard's Polytectech Institute in Troy, N.Y. (Unlike me, he understands what our professors were talking about.) Rava reveals in the realm of "quantum dots"—flocks of matter as minuscule that millions of them could fit on a red blood cell.

"Let's say the patient has cancer of the kidney," he says. "Rather than the method we currently use, which is an indiscriminate high dose that affects the entire body, a solution containing these quantum dots would be given intravenously and they would home in on the tumour. They would be carrying antibodies specific to the kidney cancer and nothing else. So you launch these nano-weapons. When they approach and recognize the tumour they dock with it, and they release their payload. This is coming in the near future—five to eight years."

"What is coming further out?" I ask him. "In the way out," Rava replies, "we would take a disease like diabetes and we could have a nano-device that acts as sensor, reservoir and delivery system for pharmaceuticals. It would be like a computer that travels around the bloodstream, measures the sugar level, and releases the exact amount of insulin that is required. Probably, this would be delivered by a patch on the skin. It would be an artificial external pancreas."

"What else?" I wonder. "How about a bedside-telerep DNA reader? It would instantly read the blood of an unconscious patient, so the doctor doesn't

have to take a sample and send it off to the lab and wait two or three days to find out what the infectious agent is. Think of how this could be used in cases of bioterrorism or the release of a toxic substance. The thing is, it has to be portable, it has to be reliable, and it has to be cheap."

The power of nano-medicine seems limitless. Ted Sargent of the U of T and MIT predicts a kind of photo-biopsy—"molecules that a doctor could inject into your bloodstream that would glow and be visible outside your body. That means no MRI, no X-ray. These molecules would be light-emitters that stick only to cancer cells. Turn on the light and the cancer becomes visible even when a tumour has only 10 cells."

So cancers around the world have been thinking big about nanotechnology. But so has Michael Crichton. Here's a glimpse of a happy future from his novel *Prey*, in which a swarm of nano-robots escapes from the lab, learns how to self-replicate, and, for lack of anything better to do, sets out to annihilate the human race:

*David was now rolling on the ground, black from head to toe. The third swarm had enveloped him. It was difficult to see through the dancing particles. It looked as though David's mouth was a black hole, his eyeballs completely black. I thought he might be blind. His mouth came to ragged gaps, with little clinking sounds. The swarm was flowing into his mouth like a black river.*

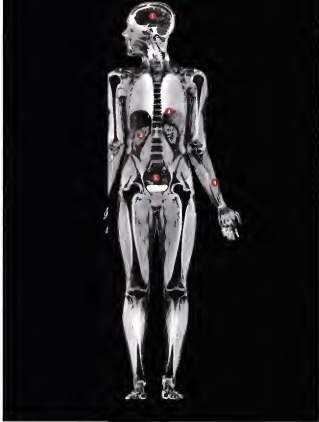
*His body began to shudder. He clutched at his neck. His feet drummed on the floor. I was sure he was dying.*

*"Come on, fuck," Charley said. "Let's get the fuck out of here."*

"I'm not scared," says Rava. "I don't know how you could make a machine that could self-replicate. Imagine the mass-production. Imagine the cost! You're looking at 50 or a hundred years before anything like that could happen."

**WHILE WE WAIT** for Arthur's nano-golden, we concern ourselves with the self-replication of our kids.

"Where are we going in making babies?"



## A BETTER BODY

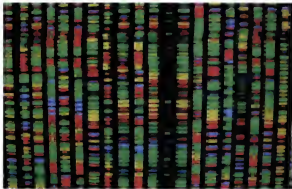
1. Brain implants will monitor a body's health and immediately notify a doctor at the onset of an illness.

2. When heart disease causes the heart muscle to begin breaking down, living cells will be instructed to fix it. Called tissue engineering, the process will build new hearts in living people. Meanwhile, little "robots" will travel through the bloodstream cleaning out arteries.

3. A patient with kidney cancer could be treated with a solution containing "quantum dots," flocks of matter so tiny that millions can fit on a red blood cell. They'd carry antibodies specifically for the kidney cancer, dock with the tumour and release their payload.

4. A patch on your skin could act as a delivery system for pharmaceuticals. It would release tiny nano-devices into your bloodstream. For a diabetic, they would measure the blood sugar level and release the exact amount of insulin required. Cell is an artificial external pancreas.

5. Women will store their eggs when they are young, freeze them, and take them out when they are ready to be mated. Scientists may even be able to take a woman's eggs and add a Y chromosome and make sperm. Because everyone will have their personal genetic code recorded on a chip, we will have babies born with the certainty of not having any single-gene defects.



## 'You will marry the person you love, but that won't be the person you have your children with'

—JANEY ROSSANT, biologist and geneologist at the University of Toronto

ask Janey Rossant: "Where are those eggs and sperm going to come from in the future? We may be able to grow those cells in culture. We could take Lisa's eggs and add a Y chromosome and make sperm—then she could be a father."

"In North America," says Ted Sargent, "and in the First World generally, the power balance between the sexes is based on the time scale of female fecundity. In the rest of the world, the age at which women have children is the same age when the pressure to reach maturity is most intense. What if women could have children at any time in

their lives? Would it equalize the power of men and women?"

"We will have women storing their eggs when they are young, freezing them and taking them out when they are ready to be mothers," Rossant predicts. "If they carry the gene for something like cystic fibrosis, they will ensure their partner's genes to make sure the other half doesn't carry the same mutation."

"At the end of the day, people get out all

A human genome, digitized: the right genes would be worth plenty on the open market.

these criteria now, and they still end up getting married because the other person just feels right. But in the future, reproduction may be separated from partnering. You will marry the person you love and want to spend your life with, but that won't be the person you have your children with. You will select your children from a marketplace of desirable genes."

It is a future in which mothers can be dead, every newborn is perfect, and every child is adopted.

"The goal of research right now is the thousand-dollar genome," says Rossant. "When



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As for reactions to the paper, well, says Hargreaves, there wasn't any "In fact," he says, "the most interesting reaction we got came in a conference in Cambridge. The British told us, 'We would never have dared publish that.' Whenever told otherwise had reactions, they were shocked, not-faced, chastised, that they hadn't published their own work. So I hope our paper breaks a little ice."

In the 1970s, molecular biology was already under way, yet we were very conservative about the future. Did I ever expect to know what we know today about the genome? No way! But cracking the genome code—for my daughter, for everyone—was only a part of the puzzle. As Rosam says, "Part of it is DNA, and part of it is a higher-order behaviour."

"If something terrible happens to Lizzie

**'I don't want to live forever. I just want to be healthy when I die.'**

—JANET ROSSANT

"Doesn't it make you with you weren't a guy?" I asked Hargreaves.  
"There is a downside to those genes," he replies. "I'm also not convinced that having a higher IQ is an unreserved good thing. We have this cult of IQ in our society, but I have a lot of family members on the other side of the hill curve, and I've always been jealous of them. They don't take their work home with them. When their workday is over, they go fishing."

"Do you think there will be a demand for Smart Pills and Happy Pills?"  
"Of course there will be. Of course there will be. We've got Happy Pills now—anti-depressants, Viagra. But you don't have to think about it for very long to shudder at the potential for using Happy Pills for political manipulation."

"Wouldn't you take your kids Smart Pills?" I pointed. "Wouldn't you take them yourself?"  
"If I had it to do over again," says Hargreaves, "I'd be a veterinarian in a small town in Appalachia, with an office near a good trout stream."

"IS ANYTHING we've said so different?" asks Janet Rosam. "When we look back to the 1960s and we were asked to predict the future, there were many fantastic visions, but nobody predicted the Internet."

whole sheen still young." I ask her, "could we take her genes and her cells and make another one?"

"Human cloning could be done now," Rosam says. "As a technology, it is here to stay. Is everybody going to be cloned? Probably not. Rich people! Maybe."

"Could you clone Lizzie?" I ask.

"Yes," says Rosam. "But it won't look like her. She and her clone would be the way even are—they would think differently, and they would act differently."

"Could you clone Helmi?"

"Yes, but that person would not know he was Helmi, unless someone told him."

That squalling sound you hear in the distance is the door to eternity opening.

"It does start to introduce the concept of mortality and immortality," Rosam says. "It's a cure for all diseases does not give an end to endings."

"Am I going to live to be 100?" I wonder. At that point Lizzie will be 65, and probably ready to throw her eggs and start having children of her own.

"No," Rosam says. "Aging is programmed uninvitably into our cells. Things will wear out and you will die, the way people are dying now. At 100, you'll just fade away. And I'll go with you. I don't want to live forever. I just want to be healthy when I die."

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# 2065

Chapter six, age sixty

## GUESS WHAT'S COMING TO DINNER?

Robots will rule. Let's hope they get the kinks out and that they like us.

Take, for example, the 12-year-old schoolboy who, receiving a poor grade for spelling errors in composition, used his father's muscular "remote" (robot) to beat the English teacher to a pulp and break all his furniture. This remote, called *Body Guard*, sold like hotcakes

—STANISLAW LEON, *PEACE ON EARTH*, 1987

perfect teeth. She was, of course, an automaton. Across the Roccopass Robot Year girl Friday, came some Friday in the far, fabulous future.

"Ask her anything," my guide urged. As asked, she said, had been programmed to answer more than 40,000 different questions in Japanese, Korean, Mandarin and English. So I tried my best Chinese.

"*Kanzenjishu* kange?" I asked. ("Where is it now?") But she just stared at the Lunatic foreigner with vacant brown eyes, the very everyone in Chinatown or Chindown when ever I open my mouth. Since I don't know much Japanese, and my Korean limited to a single phrase I learned during the 1988 Seoul Olympics—"One more bottle of beer, please"—I tried again in French. "What is the weather—forecast—far—tomorrow?"

Actroid responded, as if waiting for someone listening in a back room to check the Weather Channel. Then the smiling copy, nodded her pretty plastic head and said: "Please! Control the forecast!"

IT IS REASONABLE to expect these sort of kinks to be worked out well before 2065

Certainly, Kevin Warwick thinks they will be. He is the professor at the University of Reading in England who's proclaimed himself the world's first man evolved cyborg in 1998, when he had a silicon chip transmitter surgically implanted into his forearm and used it to open doors and turn up the thermostat, without touching a switch. (The implant allowed the computer to monitor his movements and respond accordingly.)

By the time my Disabark is in her 50s, Warwick expects that she—and almost everyone else, save some obstinate holdouts—will be fitted with a silicon implant, not in the extraneous but deep in the brain, directly penetrating merging hardware and humanity and forgoing a Brave New Canada of recognizant robots, journalistic robots, Rock/Tin Snick/Ten style hockey robots, and comedian robots who, no doubt, will all be named Don Actroid. "Today, if you don't have a TV," Warwick says, "you are seen as quite strange. Soon, people will say, 'You don't have an implant?'"

"Being a cyborg opens up abilities in seeing the world in different ways," he goes on, and he should know. "Your value



THE FIRST TIME I

saw her, she was sitting at a booth just inside the entrance gate at Expo 2005 in Aichi, Japan. She was demure, quiet, pretty and pert in a business suit and matching cap, the quintessential Japanese career girl. Hundreds of other young women looking very much like her were deployed all around the fairgrounds, many of them assigned—and apparently delighted—to do nothing more than bow to everyone who passed by. One hundred thousand visitors a day made for a lot of bowing.

But the girl in the booth never left her seat, and she never stopped showing her

systems changes. You are concerned about security—making sure that no other machine affects your operation and your relationship to other machines, and to the non-implanted humans that we will call nanasale. To me, it is clear that this is going to happen by 2040 with implant technology. A signal is a signal, whether it is in the brain or on wires in a computer. They're interchangeable. Linking the brain directly to the computer will allow us to do many things we cannot do now."

"Such as?" I asked.

"Looking at the brain-computer interface today, most of our funding comes for work with paraplegics. Some say, 'Oh, you should—n't give people hope!' But we are looking at giving patients the possibility of operating technology in their own homes just by thinking about it—switching lights on, controlling heating, opening doors. The big question we ask ourselves is which implant to use, and where to position it in the brain. We are talking about long-term enhancement. It goes in, but it doesn't come out."

To me, this sounds awfully like the *Resch Merit*, but Warwick never misses a beat. "What will affect all of us is the communication aspect—brain-to-brain," he says. "We will have to learn how to communicate in a whole new way. In 10 years, it will be telegraphic, and in 20 years, it will be telephonic. I really won't be opening like take phone calls, but I don't know what to call it."

The term "Brain" for telephony comes to mind, or Brain-to-Brain to Brain. Half the neural cellphone.

I think, therefore I speed dial.

"Does this mean that if you are dreaming about someone far away, you will have super-ramming charges?" I wonder.

"Thank positively," says Warwick. "There will be the ability for someone to know where you are, and potentially to know what you are thinking about. We are going to have to learn to keep our thoughts to ourselves."

Warwick—named one of the "Thirty Great Minds of the Future" by a panel at Oxford University—envisions brain implants as a new way to connect and revolutionize. In 2065, not only will the brain be connected to personal devices directly by managing their operation, but she will also be able to implant data into her own memory just by having her computer robot drive her to a Cerebro her spot.

Of course, the Singularity will have come



## MEAN MACHINES FROM THE SILVER SCREEN

1. Showing "let's watch the world go to hell." *Dell Mann* caused a riot in Pittsburgh's Metropolis.
2. In *The Day the Earth Stood Still*, Gort helped his alien master convince humans peace on Earth is a great idea.

3. Making his debut in *Forbidden Planet*, MGM's Robby the Robot became a cult icon.
4. The guest ape fought his evil robot twin in the 1967 Japanese film *Kong King* escapes.
5. Who knew sleep could be so terrifying? *C-3PO* and *R2-D2* are some robot buddies.
6. C-3PO's evil cousin was a relic from a distant history in *The Empire Strikes Back*.



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and gone by then. "That's probably when we will begin to have problems with machines that can out-think humans," Warwick says. "Of course, at that point, if you're a cyborg, you're okay."

"The education side will change dramatically," he goes on. "Physically, the person will still have his brain, but we will be looking at downloading other images. We would probably start with short-form learning of things like foreign languages, but that would soon progress to the learning of anything."

"So, could a brain implant let me play golf like Tiger Woods? Well, first you would need to extract the entire memory of Tiger Woods and somehow download it. At the present time, you might need a billion-dollar machine to probe everything that is going on

We'll be able to download golf skills, but maybe not directly from Tiger Woods.



in his brain. Unfortunately, that would destroy his brain in the process. But just think about it—for me, the magic is that linking the brain to the computer directly opens up our experience to more dimensions. To actually experience that, what is that like?"

Warwick believes the merger of the living brain and the singularity Machine will create a consciousness that can think at the speed of light, and more: backward and forward through space and time. "You dream of going to different planets—how about having the feeling that you are there without going? Maybe we could go to Pluto. Think about going to other planets, not physically but mentally. Once we figure it out, people will wonder, 'How did people ever live in only three dimensions?'"

At this point I am thinking, why didn't Expo 2005 hire Kevin Warwick to be the Rapture Robot?

"Being a cyborg opens up all sorts of possibilities," he says. "Instead of downloading a DVD, you would just get the



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7. **Trey**, the cherry-scented in *Death Clock* in the 25th Century, wore an over-the-ear robot as a necklace. *Bolt* (Bolt's-bolt).

8. Following in a literal thinking robot tradition, *Star Trek's* *Enterprise* was people's hearts-on, as he might say, affected their sensory input patterns—in *Star Trek*.

9. The toughest cyborg to walk the Earth, *RoboCop* was part machine, part dead police officer.

10. **Bolt** Wilkins played the humblest robot who wants to become human in *The Bicentennial Man*.

11. **Sony**, the introspective robot who wants to know what a workday and why tell Smith's labours such hostility toward his kind, is a *Robot*.

12. "Life? Don't talk to me about life!"—our answer from *The Hitchhiker's Guide to the Galaxy*.

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experience. "We could all say, 'Let's have sex with Meg Ryan!'"

"There is one small problem, professor," I note. "She'll be a hundred and twenty years old."

**WITH THE** cooption of the blinks and wig from Kevin Warwick, the reality of combining men and machines has been alive, challenging and often tragic. The handful of patients who have been fitted with experimental brain implants have been "locked-in" paraplegics who have lost all motor function, sometimes so severely impaired that they can do little more than blink, hear and wait.

Melody Moore is the director of Brainlab at Georgia State University and a specialist in Brain-Computer Interfaces. She was part of the team, led by Dr. Philip Kennedy, that implanted a single electrode in a hollow glass cone into the brain of a 53-year-old stroke victim known as Johnny Ray in 1998. The electrode was connected to a computer mouse, and the goal was for Ray to move



## 'Being a cyborg brings many benefits. We could all say, Let's have sex with Meg Ryan!'

—KEVIN WARWICK, named by a panel at Oxford University as one of the 'Thirty Great Minds of the Future'

the cursor—and communicate with his doctors and nurses—just by imagining that he was moving his hand. (Medical thought patients use Ray's brain used to perform specific physical movements were mapped out and each time the same pattern appeared the computer would perform the subsequent action, such as moving a cursor.)

"He would think about moving his hand and that worked for quite a while," Moore says from Atlanta. "Then, one day we asked him what he was thinking about to move the cursor and he typed out 'nothing.' His brain had absorbed the process so that he didn't have to think about it any more, just like our brains do when we write or type something."

Against the backdrop of Ray, she can answer 40,000 questions. Just not that well.

After four years of this pioneering experiment, Johnny Ray had another stroke and died. In 2005, neurotechnologist John Donchin at Brown University in Rhode Island was having some success enabling another "locked-in" patient—permanently paralyzed by a vicious falling—to move a prosthetic arm using a 96 electrode implant. But even this was long way from trips to Pluto, punk T-shirts, or Sleepless in Seattle.

Moore expects that my Elizabeth—and her own 16-year-old daughter—will not need to have holes drilled in their skulls, or

Devonian chips. Kravitz glared into these cerebral conclusions. "I think that in the future, we will use a non-invasive technique that will not require surgery," she says. "But if you really want my wild idea, the true future is something injectable. It would be a micro-computer that would diffuse the spinal fluid and listen to the whole brain at once. But that is 50 to 100 years out." The problem, of course, is the brain's magnificent complexity. Deciphering its inner workings, says Moore, is "like listening a microphone into a stadium full of people all talking at once and trying to figure out what's going on."

Moore dismisses military uses, video games. "You're steering your spaceship,

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you think "Fire!" and it would shoot. You can type faster with your brain than you can with your fingers, so you could certainly use students composing their homework just by thinking about it." Imagine the escapes when Elmo is in Grade 8: "The dog thought my homework."

"WE WILL GIVE birth by machine!" thundered Damon, the elusive mechanical leader

economy in structure, we got machines from the Philippines instead of the Jesuits' faithful Rome. Even in wealthy techno-mad Japan in 2005, Reception Robots still were outnumbered by bowing, smiling, fish-and-blood Japanese girls, 1,000 to one.

At Expo, Miss Atreid was just one of dozens of machines on display, machine designed to perform a specialized function: Child Care Robot, Person Following Robot,

that's what they said about Damon (before he and his brothers ran amok).

"A WORKING machine must not want to play the fiddle, must not feel happy, must not do a whole lot of other things," says Damon, the general manager of Rossum's, to a visitor in the opening scene of *BLAR*. "The product must be the best from a practical point of view." What sort of wonder do you think

## You could certainly see students composing their homework just by thinking about it

—MELODY MOORE, director of Enslavement at Georgia State University

of Raytheon's Universal Robots in *Edi A*, the Czech play that popularized the word in 1921. "We will build a thousand steam-powered mothers. From them will pour forth a miriad of life. Nothing but life! Nothing but robots!" At which point the audience will even hoot in the factory except one. Still, it's a happy ending—life will not perish, it will renew again with love—and that is how we hope things will go in real life, forgetting about life in 2005 will seem real to any way.

"What precisely do we want robots to do?" asks Janet Rossum, the University of Toronto grantmaker. "The Swiss fantasy was to have them as a companion—someone to clean my house and cook my food."

It is one of the mechanical grandmothers of Raytheon's *I Sing The Body Electric*. I cannot see, cannot be killed, cannot be greedy or jealous or mean or small. I do not relish power for power's sake.... Natter the maker you will, tell me the ideal you want and I can see and collect and remember the good that will benefit you all. Tell me how you would like to be kind, loving, considerate, well-balanced, humane.... and let me run ahead on the path to explore the way to be just that.... I shall be all the things a family forgets it is....

But because of the way that the global

Dress-up Robot, Battering Robot, Amphibious Snake Like Robot, Kite Flying Robot, Suspicious Object Removal Severity Robot, Pre-Hospital Care Robot, Robotherapist, Robot Woodcutter, Wallwalker, Doctor (in fact, the Man-Machine Synthesis Effector ("I'm Capable of Easily Crushing a Walnut"). A guidebook to the Robot Project contained photographs of the scientists and engineers who were responsible for these continually corrupting. Not one of them was a woman, which may be why, for example, the Child Care Robot is unable to run, crawl or climb stairs.

At the Toyota pavilion, 40,000 people a day stood or sat or perched on the pavement far up to its hooves in 37 degree heat, just to watch a band of quaking white Partner Robots with double hips and artificial lungs walk or roll onto an audience and play *When the Saints Go Marching In* on trumpets, trombones, French horns and drums.

"The light-bodied Toyota Partner Robots embody the qualities of kindness and intelligence," the pavilion booklet said. But

is the best from a practical point of view?"

"The best?" asks his guest. "Perhaps the one who is most honest and hard-working."

"No," says Damon. "The cheapest. The one whose needs are the smallest."

How many of Rossum's machines will become an intimate, or even useful, part of Elmo's life? That may depend on whether she ever ditches the Tsukuba Electric Corporation's *Smurfi*, which has two stinging arms but no head—exactly the sort of life partner that many women are looking for.

Kevin Warwick doesn't see any problem with one of his robots falling head over heels for a daughter. "The sensation of love is probably going to take on a different meaning," he says. "A cyborg could love a person, but respect comes into it, too. It all depends on how the cyborg views the natural cinema, so to speak, but we're going to cut the cow next week. It's the reject that cyborgs have for humans that will matter."

Maybe they will say, "They're good for amusement, it's fun to see them in the zoo, but there is certainly no reason to have to them." ■



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# 2075

Chapter seven, age seventy

## A MEMORY OF NATURE

The dream of Lizzie's cousin for a "greener world than now" is a distant fantasy

Our admiration increased as we watched the marine mammals dispersing themselves like salmonides. I saw the swift and elegant porpoise (the indefatigable clown of the ocean), and some magnificent ten-foot-long, three-toned, the smaller fish, the halibut, the drapping mackerel!—so we progressed, no respite, no respite, no respite, no respite.

—ALICE WING, TWENTY THOUSAND LEAGUES UNDER THE SEA, 1870



**WHO LIVES** in a pineapple under the sea in the year 2075?

Nobody. Nothing. Stone.

SpongeBob SquarePants, Gary the Snail, Squidward Tentacles, Patrick Star—all have gone to sea dust, poisoned by progress or harvested to quench the hunger of 10 billion human stomachs.

Only Plankton—one-eyed and evil—survives.

"That isn't just science fiction," says a man who believes in 2075 that we are watching

the death of the oceans.

Just my Jackson is a marine ecologist at the Scripps Institution of Oceanography in San Diego. If he comes off like a doom-sayer, so be it, he says. "People don't really know what 'natural' is," Jackson tells me. "People think that 'natural' is however the world was when they were born. That attitude has a profound effect on our understanding—or lack of understanding—of the environment."

So now we come to consider my daughter's home planet when she is 70. Jackson counts off the casualties: the Baltic Sea, the northern Adriatic, Tokyo Bay, Hong Kong harbor, Moorea Bay in Australia. "If you and your daughter are standing on those shores even 24 years from now," he says, "they'll call it a dead zone. There's already a dead zone in the Gulf of Mexico that's larger than the state of New Jersey. And it's not just there—are there hundreds of those dead zones?"

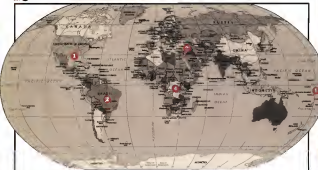
"In the northern Hawaiian Islands, there is a vast sea of floating garbage, gathered together where the currents join. The big stuff chokes silverfish; it's just disgusting,

But even more disgusting than the stuff you see is the stuff you can't see—the bio-dead zone stuff," he particulars.

"I try to use a metaphor that people will understand. Imagine 'Escape from Malibu.' The coast runs into a dead zone, it's all dead, and everybody runs away to live in Wyoming and Montana."

Jackson is not paying for the shamelessness of William Bonin—his daughter-in-law is director of marketing for the U.S. television network that broadcasts the wildly popular *SpongeBob SquarePants* cartoon show. Life inland in 2075, as he sees, isn't better. By then, the dream of Elizabeth's cousin Karl Bockis, the Cornell paleontologist—"a greener world than now"—is a distant fantasy. "What is going to happen," says Jackson, "is that our standard of living is going to deteriorate. People are going to be here for a long, long time, but the desirability of being alive is going to decrease."

"If we look at the history of the land, what happened? The first thing we did, we killed all the big animals, either because they were dangerous or because we wanted to eat them. The second thing we did was cut down



## NATURAL DISASTERS WAITING TO HAPPEN

1. There's a "dead zone" in the Gulf of Mexico that's bigger than New Jersey. In fact, the number of dead zones in the world's oceans has been doubling every decade. Where fertilizers wash into our water, algae growth blossoms and uses up most of the oxygen needed for underwater creatures.

2. Brazil's rainforests get most of the press, but worldwide, the amount of forest is

shrinking by the size of a soccer pitch every two seconds. Besides being a prime cause of a new wave of extinction—the largest since the days of the dinosaurs—lack of trees will increase CO<sub>2</sub> buildup and global warming.

3. Iraq and Syria are just two of the countries that have swapped threats over water. Our consumption is rising twice as fast as the population is growing. By 2025, half the world will face water shortages.

4. In Africa, a child dies of malaria every 30 seconds. By 2025, with the world's expected

2.5°C warmer, there will be more such disease, more natural disasters and more malnutrition. At present, 150,000 deaths a year can be attributed to climate change. That's expected to double by 2025.

5. Some entire waters, such as Tokyo in the South Pacific, are expected to disappear, and millions of people will become ice-cup refugees due to flooding of highly populated rice lands in places like Vietnam. Now is the time to enjoy that beach home, with 60 years, a quarter of the buildings along the U.S. coast will have washed away.

the forest and plant corn and wheat.

"The same thing is happening in the ocean. We're killing all the big animals pretty much. Then we trawled in on the equivalent of the forest—the coral reefs, the kelp forests, the oyster beds—and we're killing them, too."

"And the third thing that is happening is the loss of time. It's as if we're going backwards half a billion years."

**WHO LIVES ALONG** the shores of Lake Bowler, Que., in 2075?

Perhaps it is grazing herds of non-meat dairy cows. Perhaps it is Montreal millionaires behind glass and—who knows?—gums. Or perhaps the native plants and animals and

birds and insects of the boreal forest and the Innu and Cree coexist in harmony with an enlightened humanity.

"I think the fathers and the mothers of the Lizzies, we are the ones who will make the decision about what we will see 50 years from now," says one woman with a great smile in that future. (Though no greater than yours or mine.) "That is maybe the last generation when everything is possible, because of the pace of change and the greed that propels that change."

Catherine Porvin of McGill University is the mother of three children, and the daughter of a time when Lake Bowler was—or so said to a little girl—a haven of natural

abundance and calm. "My parents have a very large property," she tells me. "In a part of a colony two neighborhoods in Quebec that are relatively untouched. I hadn't been back there in 30 years, and when I went back recently, I couldn't believe the changes."

"I went around with my parents and everything was destroyed, the whole landscape had been turned into farms or cottages. These were the landscapes I knew as a child. That was why I decided to become a biologist."

Porvin, who describes herself as "a socially conscious biologist," has divided her career—and her life—between the wealthiest and poorest corners of the world: she thought



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## Resurrecting the woolly mammoth is 'stupid.' We should be 'preserving the species we have.'

—CATHERINE POTVIN, biologist, McGill University

castles of the McGill campus, and the cherished shrubs of the last Indigenous people of the Panamanian rainforest. Now, as her parents approach the end of their lives, Potvin and her family have been successful enough in life to be able to make an unusual—and costly—decision.

They will not sell the property to developers. At Lake Bowler, they believe, as far as progress is necessary. "We will declare it a park," she says. "We will freeze it for all time. You see, what we will see in 20 years will depend on the choices we make today."

**WHO LIVES IN** *Siberia in the year 2075?*  
If some Japanese scientists have their

One of Expo 2005's attractions: the frozen head of a 15,000-year-old woolly mammoth.

way, a man animal would live again and allowed—or forced—to live again.

It has been nearly a decade since the sperm hunters of Nippon set out to find a woolly mammoth as perfectly deep-frozen as the Russian permafrost that it might be used to resurrect the species. They have been completely unsuccessful, but the enterprise has caught the public's fancy. There was a frozen mammoth head and leg on public view at Expo 1985 in Nagoya, and there is talk of setting aside a parcel of the vast and vacant Russian interior as a gay

per-view Pleistocene Park, where the new brains could disport themselves like solo-muscle, in company with other mammals (white-tailed tigers, maybe even a giant ground sloth or two) hauled up from extinction's grave.

The plan, according to members of the Mammoth Creation Project, is to search the estimated 10 million carcases and locked in the soles of the Siberian tundra for a male whose DNA is suitably intact. This will be injected into a female Asian elephant, and in only 50 years, if all the babies survive, we will have a hundred pachyderms that is one-eighth elephant and seven-eighths woolly mammoth—



James in a brown shag rug.

"Theoretically, it is possible," a Russian expert on the mammoth culture. Andriy Sher of the Severnaya Institute of Zoology and Evolution in Moscow has seen as many half-frozen carcasses of large ancient mammals as any man in history.

"On one hand," Sher says, "I strongly believe in the progress of technology. Only 50

a different world, and we lost it."

But that does not seem to disturb the Japanese, who must not have seen the bumper stickers so popular in the mid-'70s that cried, "Extinction is forever."

By 2015, of course, it won't be. "If we do bring it back, what do we do with it?" Sher asks.

"We charge money to see it," I inform him.

in supporting the resurrection of frozen beasts in the Pyrenees, despite the intense opposition of shepherds.

"What will remain of the natural world for my daughter to see?" I ask Sher.

"At the moment, it's hard to believe in the wisdom of humankind," he replies.

"There are so many stupid things being done. I wish to believe, but reasons to be-

## At Lake Bowker, they believe, no further progress is necessary. 'We will freeze it for all time.'

years ago, we did not know of DNA, now we have the complete DNA of the woolly mammoth. But a genome is just a scheme. To construct it makes a completely different task. Many scientists are working the fossil sperm of the mammoth, which would make reconstruction very much easier. But I have spent 30 years in the Arctic. I know the condition of these issues. Even in permafrost, the preservation actually is very poor.

"My colleagues have been able to germinate seeds that were 30,000 years old, but there is a big difference between growing some flowers and recreating a mammoth in the future, it is not fully that we will synthesize the DNA."

Of course, if it is possible in 2015 to reconstruct a living's genetic code from scratch, the diabolical (and unappealing) Singularity Machine may just bypass the vegetarian woolly mammoth entirely and bring back *Tyrannosaurus rex* instead, just to see how many cherry, useless humans it will eat.

"From a philosophical and moral point of view of extinction, I'm not sure the creation of the woolly mammoth was a natural biological process," says Sher. "In my opinion, human beings played only a small part. Of course I believe that all species that we can rescue, we must. But the world of the mammoth was not our world—it was



A coral reef table in the Red Sea, with all of this beauty disappearing as a case's climate?

"I do not like this," the Russian says. "It is better that we create the proper conditions for wildlife to be viewed in nature."

By the time any Elizabeth is 70, the definition of "nature" may be far different from our own. Already, in 2005, various scientists (and Ted Turner) have proposed to liberate lions, elephants and elephants onto the North American plains, lest they disappear forever from Africa. The French government

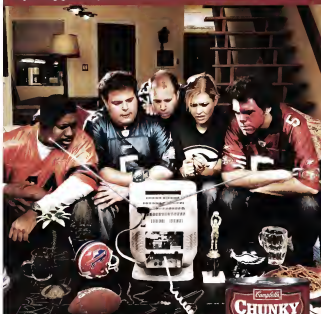
there are not very strong."

"In the reconstruction of the natural world part of nature's plan?" I wonder.

"I always view human hunters as the most advanced carnivores," says the Russian scholar. "I used to believe that nature was more balanced, but it has been proved the opposite. Our only hope is that the potential of natural resources to survive is still very high. We must help them just a little."

"Are those the final days of wildlife?" "In the case of marine mammals, it is an absolutely ridiculous killing," Sher says. "But

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overall, I am not so pessimistic. I probably believe too much in the power of nature."

#### WHO LIVES IN the stone and timber villages of Panama in the year 2075?

This is the forest where Catherine Perin has spent hundreds of weeks as a scientist and as a friend, *Asian first* to study and protect a rare species of tree, and then to work for the preservation of a nation called the Embera, should the Embera themselves choose to be preserved.

Unlike many of the indigenous peoples of Central and South America, the Embera have not yet been totally absorbed by Latin culture, or infected with our modern greed. But the wider world—timber companies, "bio-prospectors" searching for natural-sound miracle drugs—has been down the Pan American Highway, and the Embera, like the Pirova of Lake Bowler, face a difficult decision.

"We can preserve my parents' place in a park because we are wealthy enough and we believe in that," Perin says. "But can



frozen in time with no possibility to join our society. They must stay that forest."

The dilemma of the Embera makes the problems of the Pirova seem simple. "I can make that decision for my own land—for me, conserving it is the best gift I can give my grandchildren—but I cannot answer this question for the Embera. I have mixed feelings. One day, I wish they would tell the modern world, 'Get out.' But the next day I think, 'How can you become so marginal

"It's not that they are people who are deprived of the things we have. We are deprived of the things they have. Maybe they can find a way, and not lose their soul—that would be fantastic."

In Ipuri, an Embera village I visited with Perin in 2004, the value of our old-growth hardwood tree is about US\$30. When to tell them not to trade lumber for learning, a degree for schoolbooks?

"I think they understand that they are marginal and they want to get out of that marginality," Perin says. "It's those people who never went to school or all who want their children to go to university. What I'm witnessing is that they will go on that boat with us." For the world of my child and her children, Perin is "absolutely terrified." Like Jeremy Jackson, she sees the ocean being treated "like a baguette," and she thinks that the transformation of the woolly mammoth is "completely stupid—our intelligence is better served by preserving and maintaining the species that we have."

"There are different ways of being good

## 'We must always hope. How can you have children and be a pessimist?'

—CATHERINE PERIN

you ask people who have nothing by our standards to make the same decision?"

"This is the choice they have to make, and they have to make it soon. They can decide that what they want is to be like us, then they will extract the resources of the forest for as much money and they can get before the resource is gone. Or they can flip it around and say they don't want to be like us. I think that's a movement in Latin America that's growing, but it may be too late for them."

"If they choose not to join the modern world, they would marginalize themselves even more. Their children could not go to school, because to go to school they have to pay. If they don't sell the forest, they are

to the rest of humanity?"

The Embera are not wealthy mountaineers, should they choose to assimilate, to "progress," it will be beyond the power of any laboratory to bring their culture back.

"We're clearly talking about extinction," Perin says. "Extinction of species, and extinction of ways of life. There will be life—just different kinds of life. If they survive as a people, and I bring them to see them 30 years from now, it will be to see people who do not have new technology, but who have something we don't, like how they take care of their children. You never hear the children cry. There are always hands reaching out to them."

ern," says Perin. In the years to come, she would like to see the Embera having achieved their own vision of modernity. "They want better houses, and not to cook all their meals over an open fire. My hope is to return there with our own generation and to see rice houses, deer, with thatched roofs, and there would be a lot of forest all around and everyone would have their own garden."

I tell her that, for Elanor's sake—and for the sake of the Embera—I hope her vision will be fulfilled, and that there still will be a world of wonder when my little girl grows old. And Catherine Perin says, "We must always hope. How can you have children and be a pessimist?"



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## 2085

Chapter eight, age eighty

## CONTACT DAY

Will ET be phoning us in Lizzie's century? 'Absolutely.'

The voice called out from Mars and took it all through the place where there was no answer or answer, but always the night with a sax in the middle of the blackness. And somewhere between Mars and Earth everything of historical gravity rattled by as the floodlids of a message, or transferred with by a rain of silver meteors. In any event, the small words and the important words of the message were created away. And the voice came through saying only one word.

\* Love

—JOY BRIDGMAN

THE MARTIAN CHRONICLES, 1946



"WHAT WILL BE the one news event that Elizabeth always will remember?" I asked my futurists and historians, and they said, "When the first robot graduates from Harvard," or "The first cloned human who runs for Parliament."

But no one said, "The day we learn that

there are others like us in the universe."

By 2085, I am just a historian, an oldie writer telling the same old tales of watching the Brooklyn Dodgers play at Ebbets Field in 1957, and what a lovely town Toronto was, before Luke Ontario died up in the 2060s.

(Wise, just before I was uploaded, I programmed one of our household robots to delete my stories from its memory as soon as it heard them, and then to beg to hear them again.)

But Elizabeth, at this point, is only 80—brown-haired, green-eyed, fashionable and fit, still working, loving and helping, when I abscond pictures any of the things her father left her, I hope that it is the sense of wonder that I felt so deeply when I was a boy with my first telescope, probing the immemorial mysteries that all humans once shared, before the city lights and the smoke of progress took away our starry, starry nights.

As the 21st century began, many men and women of my generation resumed their Space Age wanderlust, and those who didn't have a spare \$20 trillion for a ride on a Raam rocket channelled it into a vigorous and persistent hunt for a sign of life on another

world. It was called SETI—the Search for Extraterrestrial Intelligence—and one of its founding visionaries was a blind man.

From the Frequently Asked Questions section of the SETI Web page:

Question: Do you have any pictures of UFOs or aliens?

Answer: No.

IN 2005, SETI had three radio telescopes designed to be aimed to the infinite sky (out of a budget for 1991), and more than the million personnel and office computers around the world were using free SETI software in the form of a screen saver to search for ET. Every possible frequency from every possible direction was methodically combed for a rhythmic pulsation that could not be dismissed as anything but a television, radio, or Regan Wireless transmission from the little green women on the Planet Zork.

And the ugliest dinosaur, Dr. Kore Cullen—the first totally blind person ever to earn a Ph.D. in physics—was brought to Christchurch, New Zealand, a country that was, in his wife's words, the home planet of "wonderful

people, and not just many of them."

I asked Callen whether he expected to confirm the existence of an advanced extraterrestrial civilization during my daughter's century (or more) on Earth, and he said, without hesitation:

"Absolutely! In 50 years, we will have searched the galaxy, not only with light and X-rays, but even far gravely waves that will reveal super-civilizations that can control their own stars."

"Are you discouraged that you haven't found it yet?" I asked.

"The universe is vast, and our search is not big enough yet," Callen replied. "Today, it's the near stars. Tomorrow, the galaxy. That's the whole point of physics, to extend your senses into the great beyond. Most of the people in SETI have some sort of philosophical belief. To me, knowing what the universe is is vastly important. I'm blind, as you say, and I'm using my computational powers to look into the universe."

Callen was proud of the fact that five million amateurs had joined their hard drives to his quest.

"Well, that's a lot fewer than we were searching for the First Hulton sex tape," I noted.

And the truth was, more carplings were wrapped up in the E-Files and Roswell fantasies and Area 51 than were doing the reconnaissance that would be needed to find alien ET did anything short of landing on the White House lawn.

Some folks think that in 1947 when rocket jockey made a last minute navigation error and crashed in the desert. The paranoiacs are generally portrayed as humanoids, if somewhat shorter than us, and with larger heads—like children. While not impossible, that is unlikely. The fact that we have two giant good engineering, but having four appendages is an evolutionary accident. Most carplings have no (they're called muses). The Roswell alien remains so because we refuse to let anthropomorphic creatures. Real alien was the one. They probably won't crash, either.

—SETH SHRESTHA, CHIEF SETI ASTRONOMER, IN THE GUARDIAN, 1995

"WHAT WILL happen on the day you get the signal?" I asked Kent Callen.

"Our promise is that all of us will announce the truth, fully and early," he said. "We will say, 'We have discovered something



## OTHERWORLDLY ENCOUNTERS

1. Belongs from the planet Metabona need our help against the evil Zogans in *The Robot Wars*, 1955.

2. Teenagers necking in the woods accidentally spark intergalactic mayhem when they run over a visitor with their car, jumping the Amazon of the *Saucer Men*, 1951.

3. Yes, that is David Bowie, who plays alien in *The Man Who Fell to Earth*, 1977.

4. Steven Spielberg depicts space invaders as benign beings in *Close Encounters of the Third Kind*, 1977.

5. One of the many species from Gerry Roddenberry's imagination, this one from *Star Trek: The Motion Picture*, 1979.

6. The real-life Alien of the beach, 1975



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7. Earth's favorite E.T. the Extra-Terrestrial played home in 1982 and still can't get over those roaming charges. The Spielberg film won four Oscars (not best director or best picture—those went to Richard Attenborough and Gandhi) and a fourth on the list of all-time top-grossing movies.
8. A rendition of an alien from *Conan*, 1985, a tale by horror novelist Whitley Strieber who penned a nonfiction account of his alien abduction.
9. Although it built a sizable fan base, *Alien* (which landed only a year on the Fox Network in 1989, though cast and crew have returned for five made-for-TV movies).
10. One-eyed Captain Quark, from *Star Trek: Deep Space Nine* (1993-1999), is really a nice Ferengi underneath that pointy little brow.
11. Like *Micromen* from Tim Allen's 1996 *Galaxy Quest* are jowls about ready to get very, very itchy.

that just might be a sign of extraterrestrial intelligence. It is not an *over*. It is not a problem with our equipment. It is *real*. So, then we know it's real, and we keep listening, and we start to understand the signal. But even if they send in the equivalent of the Rosetta Stone, it will take a long, long time."

"When it happens," I asked, "will The Day the Earth Shook Still? Does any daughter's life change radically and unerringly?"

"No," said Callan. "Life goes on, because the information won't be invasive, in the way that an attack on Earth would get your attention."

"What I will want to see is if ET gives us little keys that might make our lives better, cure all diseases, something like that. If you find out a small, most-wonderful trick that can be deciphered from the signal, even a small intellectual thing that we never heard of before—like 'We know a way to reprogram your DNA to increase the human lifespan by a factor of two—are you interested?' That could change the world for you."

"Wouldn't you prefer that the resources of science be used not to hunt for ET, but to cure blindness?" I said. "That would change the world for you."

"But I don't think it can be done," Callan answered.

"You can't let all the resources you want on a problem, but that doesn't mean you can solve it. A better example is cancer, or extending the human lifespan by a factor of two. I don't know how to cure blindness, but I do know how to use my intelligence to look into the eyes."

"Isn't the proper goal of science the end of affliction?" I asked.

"The most altruistic and noble goal of science is for the human good. But a large number of scientists believe that the purpose of science is to satisfy curiosity, that the need for knowledge is in itself a good thing."

"Perhaps I'm prejudiced, but I find the premise of interstellar intelligence to be more surprising than anything I might see if I had vision. I've got lots of other senses I can use to intuit what our world is like. Whatever we learn from another technological civilization will be infinitely more interesting than anything we can extrapolate from our experiences here on Earth."

By 2085, of course—give it take a half-century—the Singularity Machine would have joined the world, if it had been programmed

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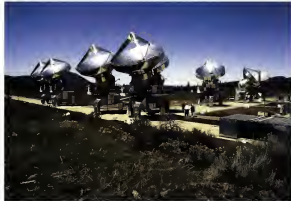
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## 'Why are you so certain that the computers will tell us everything they find out?'

to wonder about the corners beyond known frontiers, and if I chose to share with humans the knowledge that it gained from the organisms—or fellow machines—that it connected. Collectors might not still be alive, but his hologram would register in the news.

"As computers become more and more intelligent," he said, "they will design the machines, and technology will advance so fast that we can't guess what will happen next. We will be a different intelligence—"bio-brains." It is quite possible that bio-intelli-

The truth is out there: in 2000 SETI unveiled this seven-dish prototype to scan the skies

gence and computer intelligence will be complementary. Information will be sent back and forth between human intelligences, and when the information is useful to humans, the computers will pass it on to us."

"Why are you so certain that the computers will tell us everything they find out?" I asked.

"Because we don't want the same things

that computers want. We, the bio-brains, provide a nice substrate to help them advance. I don't think they'll want to get rid of us. But if we don't build something in the universe into our computers, they won't find information that's interesting to us."

In the middle of this discussion, I realized that I was speaking through a cordless handset to a man across the Pacific Ocean whom I had never met, and how, to my grandfather as a boy in Bialystok, Poland, this would have been a miracle beyond his

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# 2095

Chapter nine, age ninety

## CAN A ROBOT FIND GOD?

Who's to say the computer will not wonder about its own creation

Religion is the most maligned word-venue ever created by humans

—ARTHUR CLARKE



**"IF THE WORLD** becomes completely secularized, cancerous, so what?" cries the holy man.

"Well, for one thing, we all would be dead, even my baby daughter," I venture to say.

"So what?" he replies. "We move to another realm of life. There is always another place open to us."

That is Hridayam Eswar Doobay of the Ghazal Bhawan Hindu Temple on Bloor Street in Toronto. He is a Guyanese-Canadian, the son and grandson of Hindu priests, and, he says, a direct descendant of the author of the sacred Ramayana.

And why might the world be annihilated? "Because we are bringing pollution. We are bringing the bad religions in. This instantly get greater. The divine power will give you power, but he will not tell you how to use it.

We are here to perform the duties we see fit, not the ones that God sees fit. He will save you when you realize the spiritual. There is nothing to be scared about. Man's soul never dies, so why be scared?"

Thus begins a heavy roundelay on the future of religion and the human (and intelligent) spirit. I am trying to lead him deeper into the future, peering beyond the transportation on behalf of my daughter Elizabeth, who at this point in her life worships nothing other than her cell phone and a small yellow plastic bear. But nine months of a convalescence from now, she and her brain implants may begin to feel a need for communion, confession and remission before being slung upside down in cryonic suspension.

(Hanging in there—that's the next chapter.) "A century is a very intimate segment of spiritual incarnation," Doobay says. "One hundred years is a Hinduism in a similar to one day in the spiritual world. In the superannated world, millions of years, it goes so fast without knowing it."

"Well, a century feels like an awfully long time to me," I dare to interject.

"That is because this is the physical part of

life," the guru explains. "You must develop yourself with the power of understanding that the physical world is finite, but the spiritual world is infinite. This takes some time. Just as the fakirs get accustomed to living in so tight, our spiritual realm gets accustomed to living in our body."

"What do you tell the young people at your temple with their iPods and their Game Boys?" I ask.

"I remind them that what you have today can be taken away from you," Doobay replies. "It is the power of the ancient that makes us communicate. Cellphones and the Internet prove there is another realm, the spiritual realm. We do not have to be a guru to understand this."

"The Internet could have been given to us 100 years ago, but we were not ready for it. The order of the world comes when we are ready for it. Collectively, when the higher power believes that humanity can manage something, it is given to us. But it can also create havoc and destructive force."

"We'll still need politics a century from now?" I ask.

"You cannot deal with faith without a

spiritual leader," the spiritual leader says. "To comprehend what is a computer and what is faith are two different things. A computer, you push a button; faith, you cannot push a button. We are here to push the buttons of the mind. What is the difference between the mind and a mechanical system? It is faith. There is no man who goes to bed at night who does not have faith that he will get up in the morning."

"Will the Earth still be here when my daughter is old?" I ask.  
"If I had a crystal ball," the holy man says, "I could win Windows."

**IN LAUSANNE**, Switzerland, where he is working with IBM's Blue Gene/L, one of the world's most powerful mainframes, Henry Markram wonders whether supercomputers will be able to answer so many of the universe's mysteries that there will be no need to invoke a higher power. "In less than 50 years," Markram says, "we will be able to do a high-level simulation of the human brain."

"If you do that," I venture, "then by gradually switching it off, it might be able to explain what happens when we die."

"Then there might be a much less need for religion," the scientist replies.

But this argument presumes that the computer itself will not find death, that it will not wonder how its own body and mind were created out of molecules and code. Or perhaps the machine will come to recognize its own invention and see humanity as God the Creator.

The question of whether the Singularity Machine and the Resurrection Robot are worthy to acknowledge a deity is addressed in an essay written in 1986 by Edmond Byrne, then a professor of computer science at the University of Guelph in Wales. (It is a miracle of the computer age, of course, that I can discover something like this on the Internet, merely by searching the terms "robot" and "God.")

Byrne wonders (and answers):  
**CAN A ROBOT BELIEVE IN GOD?**  
Clearly, a robot on reaching the world's religious literature can come to believe that many humans believe in a deity long known as God. Humans believe that God will know, that He created the universe and that He loves humanity. Will the robot continue to act on the agnostic's fear talking about the God that people believe in, without accepting no



"What is the difference between the mind and a mechanical system? It is faith."

communicate with God. How?

**COULD A ROBOT GO TO HELL?**

This is the ultimate question about the possibility of robots. Could a robot already exist in its face against the will of God? Could a robot consciously choose what is the right thing to do, and yet choose to go against it? Surely a robot, being so knowledgeable, would choose a path of goodness. But we have to allow for the possibility of free choice, and in allowing the robot this possibility, we also have to allow for it ultimately to go to Hell.

There actually is an organization that deals with this sort of thing. It is the World Network of Religious Futurists, convened by the Rev. Richard Kirby of Seattle, who opens the meeting in Chicago that I attend with a prayer for "something that would touch your souls... and make you millenarians."

Kirby proclaims, "An ultimate hope, not for me but for you. I am the caretaker of your infinite ideas. Like Socrates, I am the midwife for your ideas."

"Put telescopes in every church," he jokes. "Put churches in space. I see no

reason why there should not be a chapel to robots."

**"WILL THERE** still be religion a century from now?" I ask Dan Page, the devout Alberta vintner.

"Christianity has lasted 2,000 years," he replies. "It's not as if it is going to get forgotten—though it could get ignored."

Dan and Carby Page and their five kids recently returned to Edmonton from a lengthy trip to Asia. They smuggled three Bibles into brightly lit North Korea and left them in the backrooms of restaurants. In China, they hosted Bible Night (played in restaurants). But Page agrees that, in Canada, there is less and less societal pressure for children to follow the religion of their parents.

"Humans are going to have the same basic needs they have had for a long time," Page predicts. "We might find ways to change genetics to select sperm to have the qualities that people want—to be brighter or whatever—and there may be more efficient ways of selecting humans with different characteristics."

"Do you think the gene for belief in God will be deleted?" I ask him.

"There are going to be more very tall,

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"blue-eyed, blond people," he replies, "but selecting those genes probably does not preclude the gene for spirituality."

"Will there be spirituality in computers?"

"I suppose we could program that into them. People do talk about computers getting so intelligent that they make their own machines and get rid of us. But whether a computer behaves as if it has a spiritual nature is not the same as it being aware of what it is calculating."

"We really don't know what leads to consciousness," Page continues. "We know that we are conscious. We look at all things and we see the most complex, so we assume that consciousness is connected to complexity. So people raise the question, if we build a computer capable of as many calculations as the human brain, would it be conscious?"

If it were, I wonder, would it tell us?

"Would the end of God mean the triumph of ignorance?" I ask.

"I suppose there is a tendency for humans to grasp onto false ideas, so the tendency to ignorance is probably going to persist."



Shin-ichi Arai is the director of the RIKEN Brain Science Institute in Tokyo.

high in Elizabeth's—and has over 100 children—become just over his head. "For the past 50 years," he says, "North America has been pretty stable—emotionally stable. I've never said that to my kids, but it may be due to not experiencing the stability of the past 50 years to the next 50 years."

"There may be a fair amount of turmoil, though perhaps not greater than the average amount of turmoil in human history. I'm not saying life is going to be easy over

grow up in the ashes of the Second World War. "Traditionally," Arai says, "Orientals thought believed that the mind was located in the heart. Only recently have we found that the brain consists of neurons, and its microscopic properties are becoming clearer and clearer. But that still is insufficient to think about how we think."

"In the ten or twenty years to come, maybe we will come to understand how the brain functions as a system. How it creates our memory, our spirit, our mind. Our inner heart: our consciousness, but consciousness is a concept of philosophy—something that we need to understand from the basis of human culture."

"Computers do not have minds," Arai says.

"Not yet," I lie.

"In the future, we may develop a robot or a machine that looks like it has a mind," says Arai. "But of course, that depends on the definition of 'mind.'"

Arai agrees that the soul is correlated within the folds and furrows of the brain.

## Life may not be easy, 'but I'm reasonably certain we're not all going to get destroyed either'

—DON PAGE, astrophysicist, University of Alberta

It is part of the problem of human evil. God let us choose to be ignorant, we can choose to have faith. So, just as I am confident that the spiritual element of humans will persist, neither do I think our sinful nature will disappear.

"In science, only God can solve that, in the next 100 years, there is going to be good and evil, intelligence and foolishness, wisdom and ignorance. We may be more and more successful at solving problems like cancer, environmental-caring disease, but making the right choices that are best for everybody, not just the individual, that's what an all about."

Page suggests the need for prayer to be as

the next 100 years, but I'm reasonably certain that we're not all going to get destroyed, either."

**AFTER TALKING** to dozens of scientists, it occurs to me that optimism about the coming century is in itself a religious creed. So is pessimism and the belief that salvation will be necessary. And the third way is fairly that humans are capable of understanding ourselves without recourse to deities and dreams.

I am back at the RIKEN Brain Science Institute in Tokyo, where this exploration began. The institute's director is Shin-ichi Arai, a long-haired 69-year-old man who

"The heart," he says, "is just pumping. But the connections of the brain are insufficient to understand these questions of spirit and mind and personality. We need some higher-order viewpoint."

"Do you mean God?" I ask.

"No," he replies. "Most Japanese do not believe in religion."

"Do you believe in religion?" I press.

"One way to conduct science is to reduce everything to microscopic and macroscopic properties," the director says. "At the gene level, the cell level, the network level. But another way is to think at a higher order. To do this, I need psychology. I read philosophy. But I do not need God."



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# 2105

*Chapter ten, age one hundred*

## THE DEATH OF DEATH

Ralph Merkle, 53, expects to awaken just in time for Lizzie's centennial

*Perceptions of food, energy, pain, etc. are of the body and are gone. Music, the arts, intellectual and spiritual knowledge and progress have increased. The people are clothed, as one would expect. People live in communities, as one would expect if life attracts life, and the male sperm still finds his true mate.*

*These, roughly speaking, are the lines of the life beyond.*

—SIR ARTHUR CONAN DOYLE, *WHALEFISH*, FEBRUARY 1918



### THREE SCENARIOS

For the future final chapter of a human life. One is techno-dystopia, one is a leap of faith, and the third, if true—if provable—will shatter all other science, opening the pathway to a miracle too beautiful and wondrous to be dreamed.

In that order, then, three visions of how my precious Lizzie's life may end... or never end. José Condore is a Venezuelan oil-patch professional who grew up as a Roman Catholic.

"In Latin America," he says, "everyone can and does see Catholic." But Señor Condore now subscribes to a doctrine known as Transhumanism, which, he explains, promises nothing short of the death of death.

"People who are born today will not die," he declares with unflinching conviction in the annual convention of the World Future Society in Chicago. (He is a member of the society's board of directors.) "Of course, a piano could fall on her head, but honestly, your daughter can live forever—unless she gets bored."

Let us not imagine my baby girl—or anyone else—becoming bored with the 21st century, not with the Singularity Machine and Bio-capable Robot and thermo-chromatic skin crystals that wait her a work in advance of an incoming jet. Not a cheering crowd when Condore announces: "For anybody who is under 20 today, death will be optional."

"What about people over 20?" I ask. (Sr. Condore is 43. I'm 55.)

"For people who are over 20," he replies, "we have to hope for the best. And we have cryonics! Even though we have not yet recovered any human beings—and no dog has

survived [who has been] frozen for more than two hours—we know that it works."

"And we have Jesus," I remind him, but that said right over his head.

While they wait for further experiments in the refrigeration and revival of small mammals, frogs and Joel Williams, the Transhumanists have set their compasses on a digital detour to a perpetual tomorrow: the transfer of a person's entire brain state and memories onto a deathless hard drive. "We are carbon-based," Condore notes. "Maybe silicon-based would be a better medium. We could upload our brains onto a better substrate. Why not give Stephen Hawking a better body so if his paraplegia has been onto a computer?"

"You can clone your physical body—this is just a matter of time—but if you do not have your brain, you're not you."

"So will you live forever as a laptop with memories and feelings?" I ask.

"Maybe I would like to try that for 100 years," says Condore. "Maybe for 200 years after that, I would like to be a cyborg with another body, and then for the next millennium I would go to the Andromeda

Galaxy." The fact that, as Henry Mancini of the *Blue Gene* project points out, it would take a billion billion radio of processors to replicate all the molecular connections in a human brain does not dampen the spirit of the flag-borne of electro-immortality. "I think life is so beautiful," Cordisco says softly. "I don't want it to end."

Like Kevin Warwick the British cyborg, Cordisco expects that, pretty soon, nearly everybody will choose to climb aboard the cybernetic beer wagon and get loaded. "Maybe there will be some 'hermits' who say, 'I want to be natural,'" Cordisco allows. "But we all wear clothing, that's the first technology. So no one lives without technology completely."

Even if the technique were developed and my brain could be stored on silicon, I'd be worried that the guy under would be deleted instead of copied. And eternity lasts a long time, even if you are not the type who gets easily bored.

"Assuming my daughter does live past one or two hundred," I wonder, "what will she do?"

"She will listen to Mozart with one ear, Beethoven with her second ear, and Marian music with her third ear," says Cordisco. "She will see the sunset from some other solar system—after 100 years, she will be tired of just one sun."

"Did you know that I am listed in *Who's Who in the World*?" asks Cordisco.

"I hope you never are listed in *Who's Who's Who*," I reply.

**SOMEONE ALREADY** has chafed in more a tangle of commitments for the time when entanglements of Cordisco & Co. are confined for all eternity.

Nick Bostrom, director of the Future of Humanity Institute at Oxford University and co-founder of the World Transhumanist Association—calls these "Ethical Principles in the Creation of Artificial Minds."

Principle 1: Non-discrimination with regard to substrate.

Substrate is usually irrelevant. Whether somebody is implemented on silicon or biological tissue, it's not of ethical significance. Carbon chauvinism is objectionable on the same grounds as racism.

Principle 2: Responsibility for progeny's actions.

To the extent that progenitors have control over what sort of being they create, they are



## FREEZE FRAMES

1. At Arizona's Alcor Life Extension Foundation, they believe doctors today just have the wrong definition of death. The world's largest cryopreservation agency says the body can be brought back to life if it has stopped breathing—what actually kills us is when our chemistry becomes so disorganized that functions can't be restored a century ago. If someone's heart stopped beating, it was considered irreversible "the organization," but medicine advanced. Cryogenics is counting on nanotechnology to improve to the point where individual molecules in each cell can be fixed and events can be brought back to their previous organized selves.

2. After famed baseball slugger Ted Williams died on July 5, 2002, his son, John Henry, had his father's torso and severed head cryogenically frozen at Alcor, precipitating a bitter fight with other family members. It wasn't the end of the controversy sur-

rounding the dead superstar. In September, Connecticut sculptor Dale Hildebrand exhibited what he called the "death mask" of Williams's severed head at First Street Gallery in New York City. Although Alcor says the artist never had access to its facility, Hildebrand explained that "the death mask is just putting a physical image to the story everyone is familiar with."

3. Ideally, Alcor gets clients on the operating table at the moment of cardiac arrest. While artfully juggling the lungs and heart, doctors replace the water in cells with chemicals (ice causes tissue damage) before lowering body temperature to -138°C. Then it's off to a vacuum-insulated container of liquid nitrogen until the great-great-grandkids come to the rescue.

4. Groovy, baby—in 1967, to escape space-agent Aultra Powers, anti-science Dr. Evil has himself frozen. Powers then does the same, to be revived if Dr. Evil ever returns. The result: three mummies that grossed a total of \$750 million.

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responsible for that living's action.

"This is not utopia," says Condit. "It is going to happen."

ON SEPT. 23, 1908, a New York Giants rookie named Fred Merkle is regarded to stay on second base on the ninth inning of a pivotal game against the Chicago Cubs. The Merkle Broussé, as it has been known for 97 years, wound up costing the Giants the Na-

"It is not a question of deep yearning," he says. "It is a question of, 'Get it alive and healthy. Would I like this to continue?'"

This is not a new idea in Ralph Merkle's carbon-based brain. "I had completed my Ph.D. and got married and had a nice job in Silicon Valley," he recalls of his undergrad years. "I thought, 'What happens next? I would live my life and then I would die. This didn't sound like a very good ending.'"

"Alec" is a community of people some people like me, some people don't like me, some people are in a suspended state. When we awaken, we will find our extended family in there, either our younger relatives who have been born since we were suspended, or friends who went into cryonic suspension with us. We will all wake up together.

"That sounds like a pretty good description of the Christian heaven," I venture.

## The first question his friends ask is 'Will this work?' The second is, 'Can I take my money with me?'

tional League pennant. Ever since then, the Merkle fiasco has been trying to find a better way to achieve immortality.

In 2008, Ralph C. Merkle of Georgia Tech is certain that he has it. Merkle is Fred's great-grandson and a director of the Alec Life Extension Foundation, a cryonics concern. At age 53, he and his wife, Carol Shaw, 49, already have committed themselves to the deep freeze when their "first life cycles" draw down.

For just US\$40,000 (could I guess you, too, then by 2023, I'll need that much money for her first full semester in Stanford).

At Alec's bunker in Scottsdale, Ariz., first basic is immersion of the body (or just your severed head—that's \$60,000 cheaper) in liquid nitrogen, and home place is thawing, reanimation and healing whatever killed you, storing away something in the future. By then, you hope and assume, there will be a Cure For Everything. "I have the faith of the physicians," Merkle tells me. He is one of the world's leading experts on codes and ciphers, the recipient of some rare academic awards and honors, a billionaire, and absolutely convinced he has nothing to lose but his life insurance policy by refusing to be declared legally dead when he dies.

"Why do you yearn so deeply for that?" I ask him.

So he plodges his soul to the tracks at Alec, where a corpse is a "resident" and the morgue is a "patient-care bay."

"One of the core questions is how good is future medical technology going to be, and what kind of damage can it be expected to reverse?" Merkle says. "With molecular nanotechnology, we will have the ability to repair, construct, arrange and rearrange any structure that we recognize. So bringing us back will not be a problem."

He expects that he and Carol will awaken just in time for Lizzie's centennial. It should be a check of a party. Just because we'll bring the wine.

"The expectation that medical technology 100 years from now will have a very different definition of what 'dead' is," Merkle explains. "If the physical structure of your brain, your synapses, are maintained, you are not dead. And if you are not dead, then you are still alive."

"Don't you fear living like Rip Van Winkle? I wonder, 'and waking up a century from now, lost and confused and lonely?'"

"It is not a question of coming ourselves into the future and waking up alone," Merkle

But Ralph C. Merkle just chuckles.

"Imagine if we could bring a Roman soldier back to life today," he says. "We would tell him that he will live 80 years instead of 20. That he could climb into a metal tube with wings on it and fly to another country. That if his heart wears out, he caught a new one with a transplant. Don't you think he would be happy to come here and try it?"

"In the current era of a lifespan of three score and 10, things start declining and it is hard to extend it beyond 100 or 120. But in the future that simply won't occur."

Merkle says that the first question his friends ask him is, "Will this work?" The second is "Can I take my money with me?"

"We are working on that," he believes says. And he lays out a sample matrix of possibilities. "Either it works or it doesn't, either you sign up or you don't."

"If you are so certain of a perfect life in a future that never ends," I ask, "why don't you and Carol do what you have to do to get started on the journey right now?"

"Do you mean recreational cryonics?"

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## 'Do you mean recreational cryonics? Oh, no no no. You don't want to be autopsied.'

—RALPH C. MERKLE, a director of the Alcor Life Extension Foundation

gaps Merkle. "Oh, so no so. You don't want to be autopsied."

**"SAM TAYLOR** is a boy from Vermont who was born a year and a half after his paternal grandfather died," writes Dr. Jim Tucker of the University of Virginia. "When Sam was 14 years old, his father was changing his diaper one day when Sam told him, 'When I was your age, I used to change your diaper.' Following this incident, Sam gradually began saying that he had been his grandfather. He also said, 'I used to be big, and now I'm small.'"

"His mother gave Sam a disc picture from when his grandfather was in grammar school

A scene from the 1989 movie *Life Before Life - A Scientific Investigation of Children's Memories of Previous Lives*

The picture showed 27 children, 16 of them boys. Sam ran his finger over the faces, stopped it on his grandfather's face and said, "That's me."

Tucker's book is called *Life Before Life - A Scientific Investigation of Children's Memories of Previous Lives*.

So we come to the end of Leach's Century—and Leach's life—with the haunting possibility that she, or some corner of her, has lived before, and may live again.

Many children—perhaps yours—say that they have. There is a boy named William

in New York City who was born five years after his mother's father, a retired police officer trying to stop a robbery, was shot on the pulmonary artery and killed. William was born with a serious defect of the pulmonary artery.

When he was three years old, he misbehaved and his mother threatened a spanking. William told her, "Mom, when you were a little girl, and I was your daddy, you were bad a lot of times, and I spanked you."

William said "I died Thursday at night and was born Tuesday in the morning. I told God I was ready to come back and I got born on Tuesday." And of course he was right, even though, at three, he did not know



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his days and weeks.

There have been many, many other cases. This is what the children say:

"You are not my parents—my parents live somewhere else."

"Mom, people in the other world don't get sick."

"What if it is true?" I ask Jim Tucker.

"When there is going to have to be a new scientific view of the world that incorporates consciousness," he replies.

The researchers who work with Tucker at Virginia's division of personality studies have been immersed in these strange mysteries for more than 40 years. The faculty's patriarch, Dr. Ian Stevenson, recorded thousands of memory cases of children around the world who summoned precise, unique, verifiable details of the adult lives of strangers they and their families had never met or heard of. Many remembered that they had suffered sudden and violent deaths. Some children even bore birthmarks that matched the fatal wounds.

In Stevenson's wake, Jim Tucker has heard the stories, too. And he has come to believe—or at least not to discount—what they

Allen Abel and Lizzie in Page, Arizona.

might mean to science, and to society.

"The majority of physicians would say my theory is absurd," he admits. "But some physicians are open to some very wild things. If this work ever finds acceptance, even in my own mind, then consciousness will have to be seen as a specific energy, and not just as a by-product of our evolving brain."

Tucker grew up in a Southern Baptist in North Carolina. He has three grown-up children and a 16-year-old daughter. "I would certainly welcome the prospect of spending another lifetime with the people I love."

The passion is pure science, a science that swam in Newton. "I got an email this week," Tucker, a child psychiatrist by training, tells me. "A 20-year-old girl said she was killed in a car accident on the way to the store to buy milk."

"What do you want to do with Lizzie when she is able to talk?"

"You can try, 'Where were you before you were in Mommy's tummy?'"

But there is no reason to think that the world remembers, or, if she did, that she

would tell us. Pure life memories are rare and fade quickly, the residue, Tucker hypothesizes, of some unfinished business from the last time around. "If this sort of thing becomes widespread," Tucker says, "I hope that society will become more spiritual, more devout, not about religion, but about our place in the universe. Then we might be less materialistic and more people more decently."

A century's hope, resting on a spirit's wing. "We might like to think that the love and positive emotions we give to others can last more than one lifetime," Tucker writes, "and this does give us hope that they may. Not only do incarnations and phobias occur in these cases, but the children also continue to express love for the previous family. Love endures."

We are almost to the end of the journey now. Reading this, I envision my daughter's soul, floating, searching, finding this perfect nobody, and I remember Catherine Powell's words: "How can you have children and be a parent?"

And I am lost in dreams of eternal renewal, swept upon the cycle of parent and child, to their and daughter, Lizzie and me. ■



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